CENTENNIAL
GILBERT·ARIZONA
1920 FOR OUR FUTURE 2020

20

Planning Commission Staff Report

TO: PLANNING COMMISSION

FROM: ASHLEE MACDONALD, AICP, PRINCIPAL PLANNER
(480) 503-6748, ASHLEE.MACDONALD@GILBERTAZ.GOV

THROUGH: EVA CUTRO, AICP, PLANNING MANAGER
(480) 503-6782, EVA CUTRO@GILBERTAZ.GOV

MEETING DATE: AUGUST 5, 2020

SUBJECT: UP20-03 GILBERT CHRISTIAN SCHOOL - TITAN SOLAR FIELD: A CONDITIONAL USE PERMIT FOR APPROX. 11.01 ACRES LOCATED AT THE NORTHEAST CORNER OF GREENFIELD ROAD AND RYAN ROAD TO ALLOW OUTDOOR RECREATIONAL FIELD LIGHTING IN THE SINGLE FAMILY-43 (SF-43) ZONING DISTRICT

STRATEGIC INITIATIVE: Exceptional Built Environment

This Conditional Use Permit will allow the development of a lighted baseball field on an existing school campus

RECOMMENDED MOTION

Make the Findings of Fact and approve UP20-03, Gilbert Christian School, Titan Solar Field: a Conditional Use Permit for approximately 11.01 acres located at the northeast corner of Greenfield Road and Ryan Road to allow outdoor recreational field lighting in the Single Family-43 (SF-43) zoning district, subject to conditions.

APPLICANT
Company: Deutsch Architecture Group
Name: Randy Hilleboe
Address: 4600 E. Indian School Rd
Phoenix, AZ 85018

OWNER
Company: Gilbert Christian Schools
Name: Jim Demarchais
Address: 3632 E. Jasper Dr.
Gilbert, AZ 85296

Phone: 602-840-2929x144 Phone: 480-699-1215
Email: rhilleboe@2929.com Email: jim.desmarchais@gcsaz.org

BACKGROUND/DISCUSSION

History

Date	Description
October 10, 2006	Town Council approved A05-22 (Ordinance No. 1853) annexing 664 acres including the subject site
March 6, 2007	Town Council approved Z06-12B (Ordinance No. 1895) rezoning 30 acres, including the subject site from Maricopa County Rural-43 to Single Family–43 (SF-43)
September 15, 2016	The Design Review Board approved DR16-25 Gilbert Christian School
April 1, 2020	Planning Commission reviewed UP20-03 and DR16-25B as study session items.

Overview

The subject site is part of the Gilbert Christian School campus that was approved in 2016. The property was originally approved on a total of 8.72 acres in the Single Family-43 (SF-43) zoning district located at the northeast corner of Greenfield and Ryan Roads. The applicant has proposed an expansion of the existing site for the development of a ball field. Approximately 2.29 acres are being added to the approved site plan, bringing the total site area to 11.01 acres. In conjunction with the site plan expansion, the applicant is seeking approval of a Conditional Use Permit to allow ball field lights on the site.

Surrounding Land Use & Zoning Designations:

	Existing Land Use Classification	Existing Zoning	Existing Use
North	Residential > 3.5-5 DU/Acre	Single Family–Detached (SF-D/PAD)	Vacant – under construction
South	Residential > 0-1 DU/Acre	Single Family–35 (SF-35)	Residential
East	Residential > 0-1 DU/Acre	Single Family–43 (SF-43)	Residential
West	Public Facilities/ Institutional (PF/I)	Public Facilities/ Institutional (PF/I)	Greenfield Road, then Water Reclamation Plant
Site	Residential > 0-1 DU/Acre	Single Family–43 (SF-43)	Undeveloped (expansion area) and School

DISCUSSION

The applicant is requesting a Conditional Use Permit to allow lighted Outdoor Entertainment and Recreation uses in conjunction with the private school. A total of 6 light poles are

proposed and will be located around the perimeter of the field. The light poles are proposed to be 70' tall. Although outdoor recreational facility lighting is exempt from the municipal code, the fixtures must be designed to minimize spill light and glare. The applicant is proposing the use of Musco "Total Light Control (TLC)" fixtures which are specifically designed to limit impacts on the surrounding area and utilize fully shielded fixtures as shown here.

FINDINGS

The Planning Commission is required to make four findings in order to approve a Conditional Use Permit. The findings are listed here, along with the reasons why staff considers that the findings are or are not met in this case. These findings are:

1. ***The proposed use will not be detrimental to health, safety, or general welfare of persons living or working in the vicinity, to adjacent property, to the neighborhood, or to the public in general.***
   The request for a Conditional Use Permit for the installation of outdoor lights on the Gilbert Christian School baseball field is anticipated to have minimal impact on surrounding properties. The proposal will promote the health, safety and general welfare of those who will participate and watch the activities that take place on the baseball field. The applicant has proposed the use of lights that include superior shielding to minimize light spill and glare.

2. ***The proposed use conforms to the purposes, intent, and policies of the General Plan and its policies and any applicable area, neighborhood, or other plan adopted by the Town Council.***
   The proposed project complies with Goal 1.0 of the Parks, Open Space, Trails, Recreation, Arts and Culture chapter of the General Plan which states, "Continue to enhance the quality of life for Gilbert residents by providing quality recreational and cultural opportunities." This field will add to the inventory of recreational opportunities and experiences.

3. ***The proposed use conforms to the conditions, requirements, or standards required by the Zoning Code and any other applicable local, State, or Federal requirements.***
   Outdoor recreational facility lighting is exempt from the municipal code provided fixtures are shielded to reduce spill light and glare. The proposed lights are consistent with SF-43 zoning and are a permitted use upon approval of a conditional use permit.

4. ***The proposed use, as conditioned, would not unreasonably interfere with the use and enjoyment of nearby properties.***
   The single family residential zoning districts allow private schools, however they require a Conditional Use Permit for lighted outdoor entertainment and recreation uses in conjunction with public and private schools. The proposed lighting will have minimal impact due to the installation of Musco Lighting Total Light Control system, which is

designed to provide controlled, precision lighting that cuts off impact to the surrounding area.

Pursuant to the above analysis, Staff is of the opinion that the project meets the four findings required for granting the modified Conditional Use Permit.

PUBLIC NOTIFICATION AND INPUT

A notice of public hearing was published in a newspaper of general circulation in the Town, an official notice was posted in all the required public places within the Town and neighborhood notice was provided per the requirements of the Land Development Code Article 5.205.

Staff has received no comment from the public.

PROPOSITION 207

An agreement to "Waive Claims for Diminution in Value" pursuant to A.R.S. § 12-1134 was signed by the landowners of the subject site, in conformance with Section 5.201 of the Town of Gilbert Land Development Code. This waiver is located in the case file.

STAFF RECOMMENDATION

Make the Findings of Fact and approve UP20-03, Gilbert Christian School, Titan Solar Field: a Conditional Use Permit for approximately 11.01 acres located at the northeast corner of Greenfield Road and Ryan Road to allow outdoor recreational field lighting in the Single Family-43 (SF-43) zoning district, subject to conditions:

1. The Project shall be in substantial conformance with the site plan and lighting plan shown on the Exhibits provided under Attachment Nos. 4 and 5.

2. All light fixtures shall be located out of the required landscape setback.

Respectfully submitted,

Ashlee MacDonald

Ashlee MacDonald, AICP
Principal Planner

Attachments and Enclosures:

1) Findings of Fact
2) Notice of Public Hearing/Vicinity Map
3) Aerial Photo
4) Site Plan

5) Lighting Plan
6) Applicant's Narrative
7) Minutes from the Planning Commission Study Session of April 1, 2020

FINDINGS OF FACT
UP20-03, Gilbert Christian School, Titan Solar Field

1. The proposed use will not be detrimental to health, safety, or general welfare of persons living or working in the vicinity, to adjacent property, to the neighborhood, or to the public in general;

2. The proposed use conforms with the purposes, intent, and policies of the General Plan and its policies and any applicable area, neighborhood, or other plan adopted by the Town Council;

3. The proposed use conforms with the conditions, requirements, or standards required by the Zoning Code and any other applicable local, State, or Federal requirements; and

4. The proposed use, as conditioned, would not unreasonably interfere with the use and enjoyment of nearby properties.

Notice of Public Hearing

PLANNING COMMISSION DATE: ***Wednesday, August 5, 2020* TIME: 6:00 PM***

LOCATION: Due to the impacts of the COVID-19 pandemic, all public meetings will be conducted using measures to protect public health until further notice. Please refer to the meeting agenda for methods of public participation, as permitted under Arizona state law.

***Call Planning Division to verify date and time: (480) 503-6748**

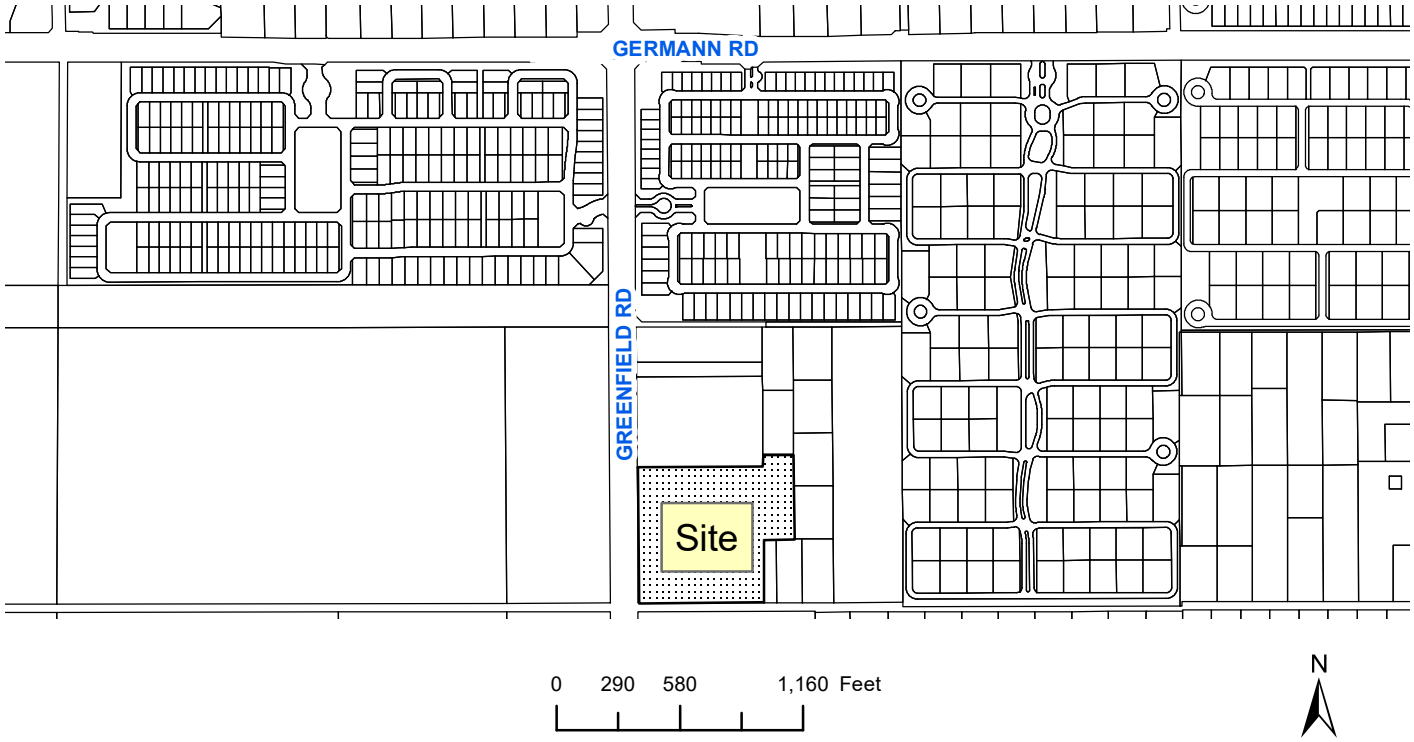
* The application is available to the public for review at the Town of Gilbert Planning Division Monday - Thursday 7AM - 6PM. Staff reports are available prior to the meeting at www.gilbertaz.gov/departments/development-services/planning/planning-commission and www.gilbertdocs.com/gilbertagendaonline.

REQUESTED ACTION:

UP20-03 GILBERT CHRISTIAN SCHOOL - TITAN SOLAR FIELD: Request to approve a Conditional Use Permit for approx. 11.01 acres located at the northeast corner of Greenfield Road and Ryan Road to allow outdoor recreational field lighting in the Single Family -43 (SF-43) zoning district.

DR16-25-B GILBERT CHRISTIAN SCHOOL - TITAN SOLAR FIELD: Site plan, landscaping, grading and drainage, elevations, floor plans, lighting, and colors and materials for approximately 11.01 acres, generally located at the northeast corner of Greenfield Road and Ryan Road, and zoned Single Family -43 (SF-43).

SITE LOCATION:

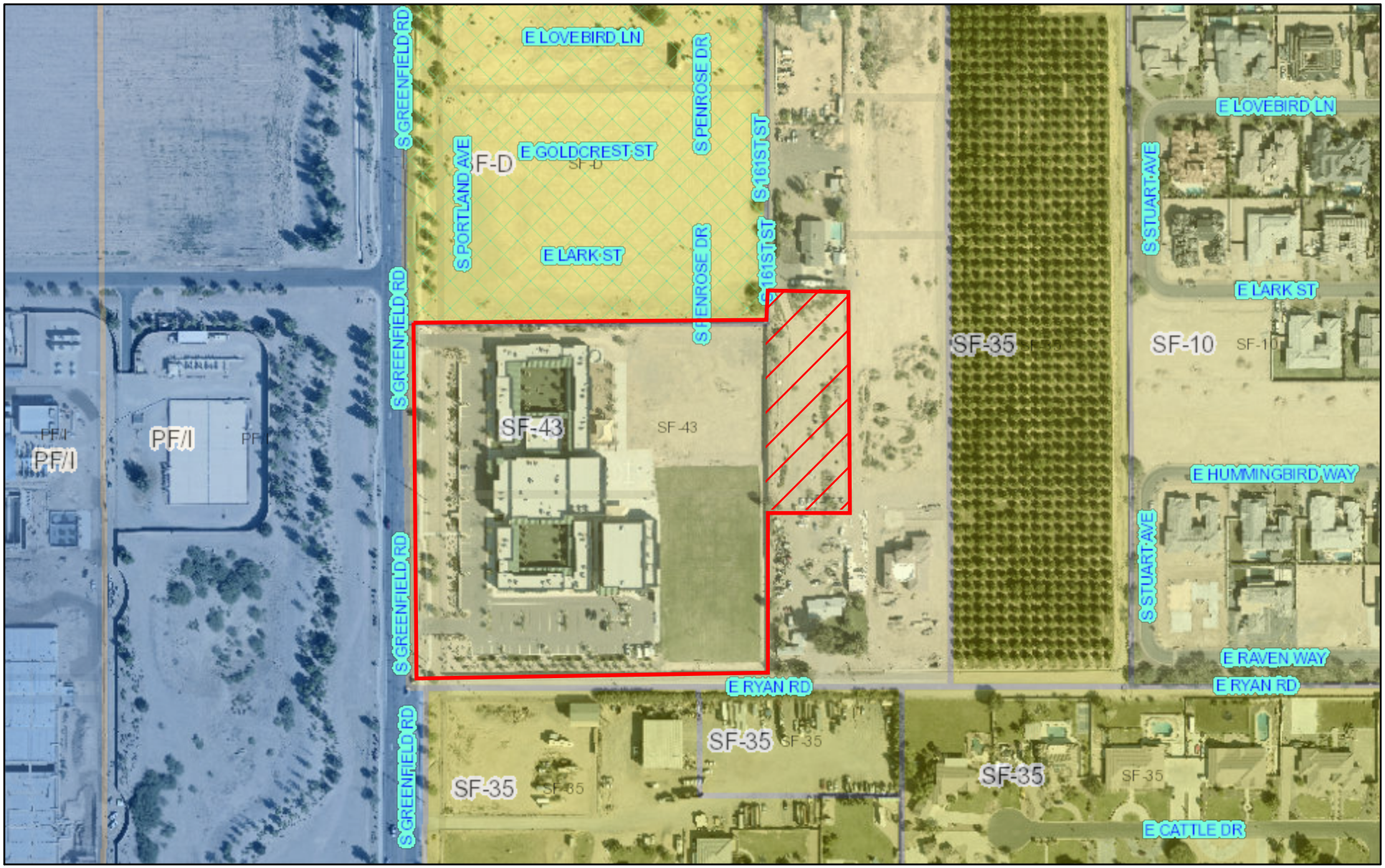


APPLICANT: Deutsch Architecture Group
CONTACT: Randy Hilleboe
ADDRESS: 4600 E Indian School Rd.
Phoenix, AZ 85018

TELEPHONE: (602) 840-2929 x144
E-MAIL: rhilleboe@2929.com

UP20-30 Gilbert Christian School, Titan Solar Field
Attachment 3 - Aerial Photo

DR16-25B GCS Titan Solar Field



July 30, 2020

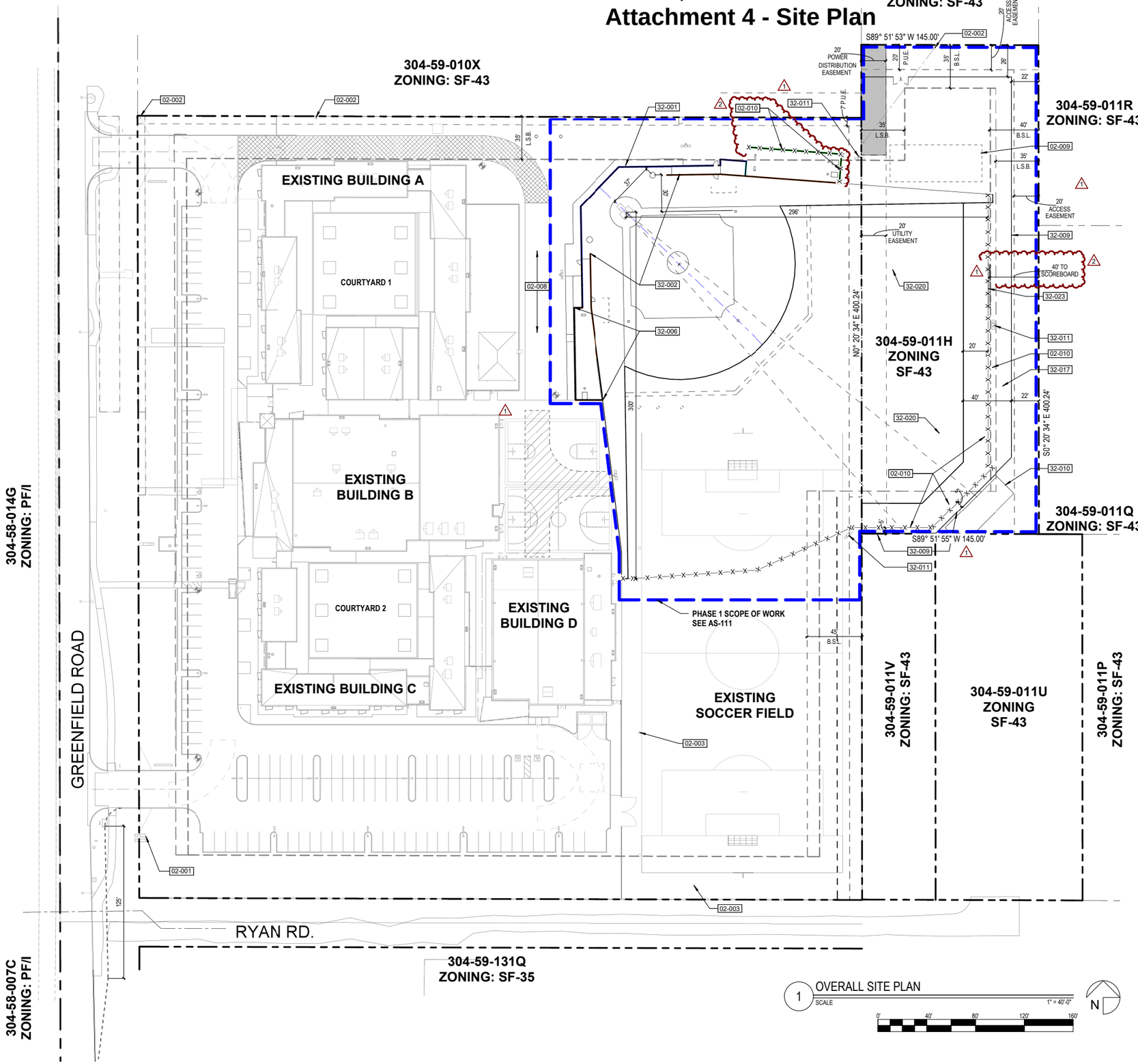
Property being added into overall Design Review for Gilbert Christian School

1:3,000

0 0.03 0.05 0.1 mi

0 0.04 0.08 0.16 km

UP20-30 Gilbert Christian School, Titan Solar Field
Attachment 4 - Site Plan



1 OVERALL SITE PLAN
SCALE 1" = 40'-0"
0' 40' 80' 120' 160'

N

SITE DATA		
PARCEL	AREA (NET)	CURRENT ZONING
304-70-586	379,902	SF-43
304-59-011H	58,022	SF-43

PARKING CALCULATION			
	AREA	RATIO	TOTAL
EXISTING BUILDING AREA	60,342		
PARKING REQUIRED			66
ADA REQUIRED		PER ADA 208.2	5
EXISTING PARKING PROVIDED			132
EXISTING ADA PROVIDED			5

COVERAGE			
BUILDING AREA	60,342 S.F.		
CANOPY AREA	14,327 S.F.		
TOTAL AREA	74,669 S.F.		
	AREA	ACRES	% OF COVERAGE
SITE AREA (GROSS)	479,578	11.01	16 %
SITE AREA (NET)	437,924	10.05	17 %

KEYNOTES

02-001	EXISTING WATER METERS AND BACKFLOW PREVENTERS
02-002	EXISTING POWER POLE
02-003	EXISTING DRYWELL
02-008	EXISTING CONCRETE FIRE LANE
02-009	BATTING CAGES RELOCATED FROM EXISTING FACILITY BY OWNER
02-010	MOBILE SPORTS FENCING BY OWNER
32-001	NEW 20' HIGH BACKSTOP WITH ANGLED TOP SECTION
32-002	NEW 12' HIGH CHAIN-LINK FENCE WITH ANGLED TOP ABOVE DUGOUT
32-004	NEW 8' HIGH CHAIN-LINK
32-006	NEW RETAINING WALL WITH CHAIN-LINK FENCE ABOVE - REFER TO CIVIL DRAWINGS
32-009	NEW 8'-0" DOOLEY WALL PAINTED TO MATCH EXISTING
32-010	NEW 20'x 60'4" THICK CONCRETE PAD - REFER TO LANDSCAPE DRAWINGS
32-011	NEW ATHLETIC FIELD LIGHTING
32-017	INFIELD MIX AT WARNING TRACK - REFER TO LANDSCAPE DRAWINGS
32-020	GRASS OUTFIELD - REFER TO LANDSCAPE DRAWINGS
32-023	NEW SCOREBOARD

2929.COM
DEUTSCH ARCHITECTURE GROUP
REGISTERED ARCHITECT
11377
BERNARD
DEUTSCH
Date Signed 07/16/20
ARIZONA U.S.A.
Expires 09/30/20
4600
EAST INDIAN SCHOOL RD
PHOENIX, ARIZONA 85018
602-840-2929 P
602-840-6646 F

TITAN SOLAR FIELD - GCS
GREENFIELD CAMPUS
4341 S. GREENFIELD RD.

NOTICE OF EXTENDED CERTIFICATION AND APPROVAL PERIOD PROVISION: THIS CONTRACT ALLOWS THE OWNER TO CERTIFY AND APPROVE BILLINGS AND ESTIMATES WITHIN 30 DAYS AFTER THE BILLINGS AND ESTIMATES ARE RECEIVED FROM THE CONTRACTOR

FIRST ISSUED:	01/21/2020

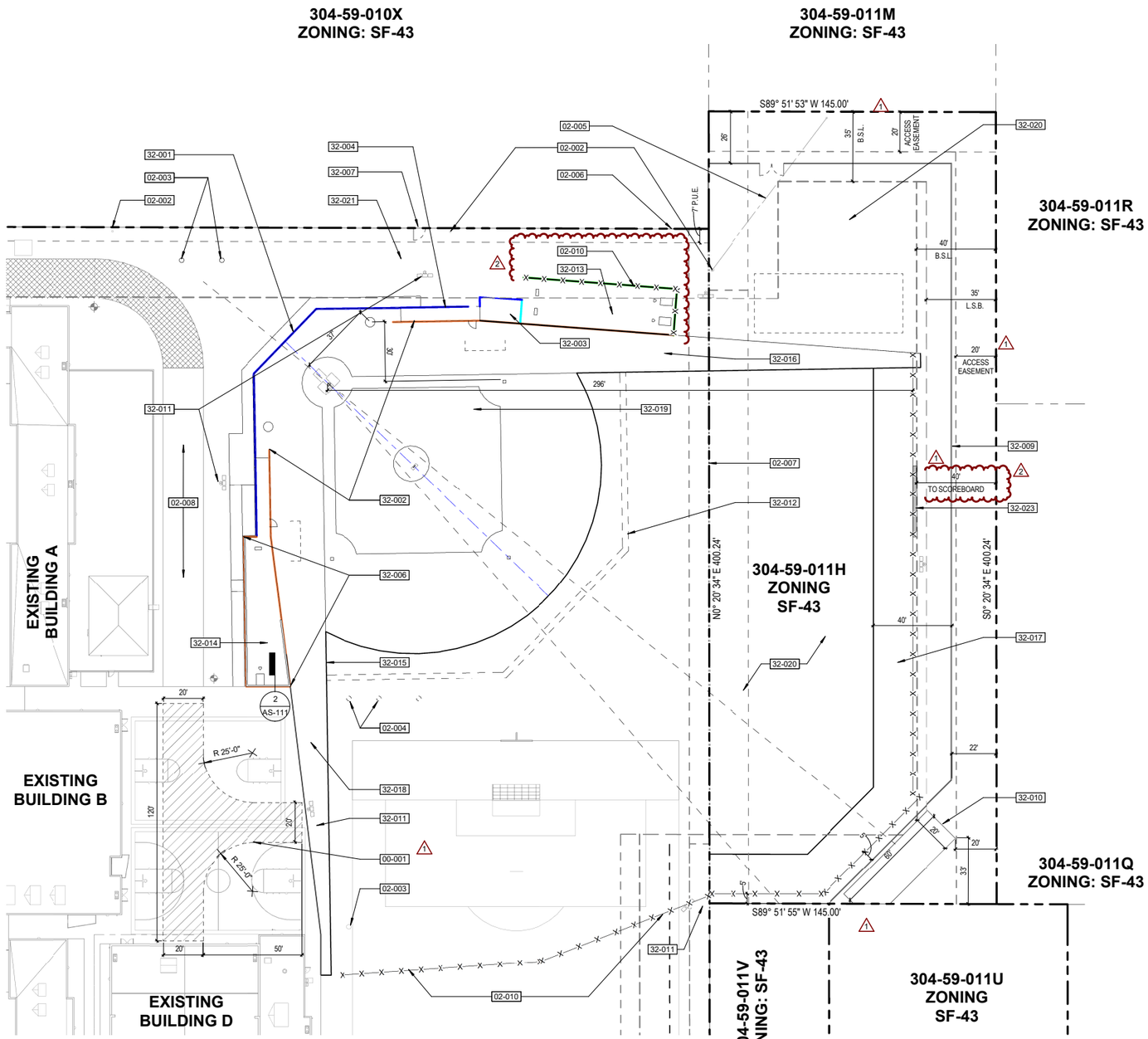
REVISIONS

No.	DATE	DESCRIPTION
1	05/22/20	DR COMMENTS
2	07/08/20	COORDINATION/ DR COMMENTS

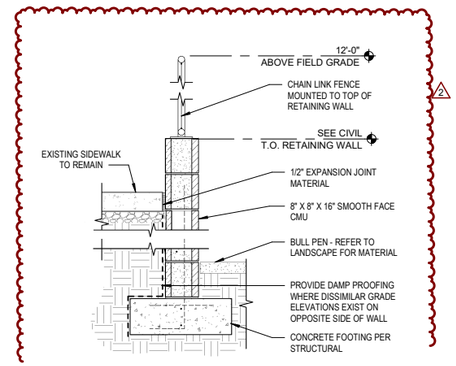
PROJECT NO:	19115.00
DRAWN BY:	KEW
CHK'D BY:	RAH/DTC

OVERALL SITE PLAN

AS-110



1 ENLARGED SITE PLAN
SCALE 1" = 30'-0"



2 SECTION @ RETENTION WALL WITH CHAIN-LINK FENCE ABOVE
SCALE 3/4" = 1'-0"

KEYNOTES

00-001	FIRE TRUCK TURNAROUND
02-002	EXISTING POWER POLE
02-003	EXISTING DRYWELL
02-004	EXISTING DRYWELL TO BE ABANDONED IN PLACE
02-005	EXISTING OVERHEAD POWER LINE
02-006	EXISTING 6'-8" DOOLEY WALL
02-007	EXISTING DOOLEY WALL TO BE REMOVED
02-008	EXISTING CONCRETE FIRE LANE
02-010	MOBILE SPORTS FENCING BY OWNER
32-001	NEW 20' HIGH BACKSTOP WITH ANGLED TOP SECTION
32-002	NEW 12' HIGH CHAIN-LINK FENCE WITH ANGLED TOP ABOVE DUGOUT
32-003	NEW CHAIN-LINK HOME DUGOUT STORAGE AREA
32-004	NEW 8' HIGH CHAIN-LINK
32-006	NEW RETAINING WALL WITH CHAIN-LINK FENCE ABOVE - REFER TO CIVIL DRAWINGS
32-007	NEW GATE AT EXISTING WALL
32-009	NEW 8'-0" DOOLEY WALL PAINTED TO MATCH EXISTING
32-010	NEW 20'x 60'4" THICK CONCRETE PAD - REFER TO LANDSCAPE DRAWINGS
32-011	NEW ATHLETIC FIELD LIGHTING
32-012	NEW FRENCH DRAIN REFER TO CIVIL DRAWINGS
32-013	NEW HOME BULL PEN
32-014	NEW VISITOR BULL PEN
32-015	NEW FOUL LINE
32-016	INFIELD MIX AT FOUL TERRITORY - REFER TO LANDSCAPE DRAWINGS
32-017	INFIELD MIX AT WARNING TRACK - REFER TO LANDSCAPE DRAWINGS
32-018	GRASS FOUL TERRITORY - REFER TO LANDSCAPE DRAWINGS
32-019	GRASS INFIELD - REFER TO LANDSCAPE DRAWINGS
32-020	GRASS OUTFIELD - REFER TO LANDSCAPE DRAWINGS
32-021	DECOMPOSED GRANITE OUTSIDE OF FIELD AREA - REFER TO LANDSCAPE DRAWINGS
32-023	NEW SCOREBOARD

2929.COM
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11377 BERNARD DEUTSCH
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DRAWN BY:	KEW
CHK'D BY:	RAH/DTC

ENLARGED SITE PLAN

AS-111

UP20-30 Gilbert Christian School, Titan Solar Field
Attachment 5 - Lighting Plan

ELECTRICAL SYMBOLS

NOTE: NOT ALL SYMBOLS ARE USED.

WALL LIGHT/OUTLET FIXTURE. UPPER CASE LETTER WITH NUMBER INDICATES TYPE. SEE LIGHT FIXTURE SCHEDULE FOR TYPE. LOWER CASE LETTER INDICATES SWITCHING. NUMBER INDICATES BRANCH CIRCUIT(S).

DOWN LIGHT FIXTURE. UPPER CASE LETTER WITH NUMBER INDICATES TYPE. SEE LIGHT FIXTURE SCHEDULE FOR TYPE. LOWER CASE LETTER INDICATES SWITCHING. NUMBER INDICATES BRANCH CIRCUIT(S).

WALL WASH LUMINAIRE. UPPER CASE LETTER WITH NUMBER INDICATES TYPE. SEE LIGHT FIXTURE SCHEDULE FOR TYPE. LOWER CASE LETTER INDICATES SWITCHING. NUMBER INDICATES BRANCH CIRCUIT(S).

LINEAR LUMINAIRE. UPPER CASE LETTER WITH NUMBER INDICATES TYPE. SEE LIGHT FIXTURE SCHEDULE FOR TYPE. LOWER CASE LETTER INDICATES SWITCHING. NUMBER INDICATES BRANCH CIRCUIT(S).

EMERGENCY LUMINAIRE. EMERGENCY LUMINAIRE IS EITHER CONNECTED TO A LIFE SAFETY GENERATOR SYSTEM, INVERTER, OR BATTERY PACK. UPPER CASE LETTER WITH NUMBER INDICATES TYPE, WHERE AN "E" OR "G" ALSO DENOTES AN EMERGENCY LUMINAIRE. LOWER CASE LETTER INDICATES SWITCHING CONTROL. THE "NL" ANNOTATION DENOTES THE LUMINAIRE SHALL NOT BE CONTROLLED AND SHALL ALWAYS BE ON. EMERGENCY LUMINAIRE SHALL NOT BE SWITCHED OFF, BUT MAY BE DIMMED TO A MINIMUM OF ONE FOOT CANDLE AT FINISHED FLOOR, UNO.

EXIT SIGN. SHADED PORTION INDICATES FACE OF SIGN. SEE LIGHT FIXTURE SCHEDULE.

EMERGENCY LIGHT BATTERY PACK WITH TWIN LAMP HEADS. SEE LIGHT FIXTURE SCHEDULE.

PROVIDE (2) 20A BRANCH CIRCUITS FOR DUAL SOURCE POWER TO AUTOMATIC TRANSFER SWITCH (AX) FROM (2) DIFFERENT SOURCES FOR A/B SOURCE OR NORMAL/EMERGENCY SOURCE POWER TO LOAD. AX SHALL BE UL 924 LISTED AND/OR UL 1008 LISTED. REFER TO FLOOR PLANS, KEYED NOTES, AND/OR DETAILS FOR ADDITIONAL REQUIREMENTS.

JUNCTION BOX IN ACCESSIBLE LOCATION ABOVE CEILING WITH FLEXIBLE CONDUIT CONNECTION TO LIGHT FIXTURE.

JUNCTION BOX IN ACCESSIBLE LOCATION.

$ SINGLE POLE SWITCH.

$_2 TWO (2) POLE SWITCH.

$_3 THREE-WAY SWITCH.

$_4 FOUR-WAY SWITCH.

$_D SINGLE POLE DIMMER SWITCH.

$_D2 TWO ZONE DIMMING WALL SWITCH.

$_P SINGLE POLE SWITCH WITH "ON" PILOT LIGHT.

$_K KEY OPERATED SWITCH.

$_T MOTOR RATED, 1hp, TOGGLE SWITCH WITH RED PILOT LIGHT AND THERMAL OVERLOAD RELAY. REFER TO BRANCH CIRCUIT FOR VOLTAGE. EQUAL TO SQUARE D CLASS 2510 TYPE F MANUAL SWITCH. NEMA 3R WHERE OUTSIDE.

$_V MOTOR SPEED CONTROL SWITCH. FURNISHED BY MECHANICAL CONTRACTOR INSTALLED BY ELECTRICAL CONTRACTOR.

$_TK MOTOR RATED, 1hp, KEYED OPERATED SWITCH WITH RED PILOT LIGHT AND THERMAL OVERLOAD RELAY. REFER TO BRANCH CIRCUIT FOR VOLTAGE. EQUAL TO SQUARE D CLASS 2510 TYPE F MANUAL SWITCH. NEMA 3R WHERE OUTSIDE.

FLEXIBLE CONDUIT CONNECTION TO EQUIPMENT. "WP" INDICATES LIQUID TIGHT AND WEATHERPROOF COVER.

SINGLE RECEPTACLE. SLASH LINE INDICATES MOUNTING IS ABOVE COUNTER.

DUPLEX RECEPTACLE. SLASH LINE INDICATES MOUNTING IS ABOVE COUNTER.

FOURPLEX RECEPTACLE. SLASH LINE INDICATES MOUNTING IS ABOVE COUNTER.

ISOLATED GROUND DUPLEX RECEPTACLE. SLASH LINE INDICATES MOUNTING IN ABOVE COUNTER.

ISOLATED GROUND FOURPLEX RECEPTACLE. SLASH LINE INDICATES MOUNTING IS ABOVE COUNTER.

SWITCHED RECEPTACLE. SLASH LINE INDICATES MOUNTING IS ABOVE COUNTER.

DUPLEX RECEPTACLE WITH INTEGRAL USB CHARGER PORTS. SLASH LINE INDICATES MOUNTING IS ABOVE COUNTER.

FLUSH FLOOR OUTLET WITH DEVICE SYMBOLIZED. PROVIDE ITS BRASS DEVICE PLATE AND CARPET FLANGE, IN CARPETED AREAS. TELEPHONE AND DATA OUTLETS SHALL HAVE MIN. 1"C. WITH PULL STRINGS STUBBED UP INTO ACCESSIBLE CEILING SPACE. PROVIDE CONDUIT BUSHINGS ABOVE CEILING.

SPECIAL PURPOSE RECEPTACLE WITH NEMA CONFIGURATION NOTED, i.e.; 6-50, 15-20, ETC.

MULTI OUTLET ASSEMBLY. PROVIDE RECEPTACLES AS NOTED. PROVIDE ALL COMPONENTS REQUIRED FOR A COMPLETE AND OPERATIONAL SYSTEM.

GFX WALLSTATION.

FCS FRESCO LCD SCREEN.

DP ER nLIGHT DIMMING PACK 0-10V.

NOTE: REFER TO ABBREVIATIONS FOR RECEPTACLE SUBSCRIPTS.

DATA OUTLET. SLASH LINE INDICATES MOUNTING IS ABOVE COUNTER. PROVIDE SINGLE GANG MUD RING WITH PULL STRING UP INTO ACCESSIBLE CEILING SPACE U.N.O. PROVIDE CONDUIT BUSHING ABOVE CEILING.

TELEPHONE OUTLET. SLASH LINE INDICATES MOUNTING IS ABOVE COUNTER. "P" INDICATES PAYPHONE PROVIDE #6 CU GROUND PER NEC #800. PROVIDE SINGLE GANG MUD RING WITH PULL STRING INTO ACCESSIBLE CEILING SPACE U.N.O. PROVIDE CONDUIT BUSHING ABOVE CEILING.

DATA AND COMMUNICATIONS JACK. SLASH LINE INDICATES MOUNTING IS ABOVE COUNTER. PROVIDE SINGLE GANG MUD RING WITH PULL STRING INTO ACCESSIBLE CEILING SPACE U.N.O. PROVIDE CONDUIT BUSHING ABOVE CEILING.

TMB 4'x4'X3/4" THICK FIRE RATED TELEPHONE BOARD. MOUNT AT 6" BELOW CEILING. PROVIDE #6 SOLID CU GROUND PER NEC #800.

CIRCUITS IN CONDUIT CONCEALED IN FLOOR OR BELOW GRADE.

CIRCUITS IN CONDUIT CONCEALED IN WALLS OR ABOVE CEILING.

HOMERUN TO PANELBOARD OR AS NOTED.

HACHURES INDICATE NUMBER OF PHASE AND NEUTRAL CONDUCTORS ONLY. WHERE NO HACHURES ARE SHOWN PROVIDE 2 #12 Cu, 1 #12 Cu G. WHERE WIRE IS NOTED ON HOMERUN TO BE LARGER THAN #12, PROVIDE SIZE WIRE AND CONDUIT INDICATE FOR ENTIRE LENGTH OF CIRCUIT. MINIMUM CONDUIT SIZE IS 1/2". PROVIDE A GROUNDING CONDUCTORS SIZED PER NEC 250 IN ALL RACEWAYS. GROUNDING CONDUCTORS ARE NOT NORMALLY SHOWN ON THE DRAWINGS.

HEAVY DUTY DISCONNECT SWITCH. HORSEPOWER, VOLTAGE AND PHASE RATED. FUSED UNLESS NOTED "NF" (NON FUSED). SIZE FUSES PER EQUIPMENT MANUFACTURES NAMEPLATE RECOMMENDATIONS. PROVIDE NEMA 3R WHERE OUTSIDE.

AC MOTOR STARTER. NEMA SIZE AS NOTED ON ONE-LINE DIAGRAM. PROVIDE NEMA 3R WHERE REQUIRED.

CONDUIT STUB-UP.

CONDUIT STUB-OUT. CAP AND MARK FOR FUTURE USE.

PANELBOARD. SURFACE OR FLUSH AS SCHEDULED.

MOTOR. SIZE AND RATING AS SHOWN. "EF" INDICATES 150 WATT EXHAUST FAN.

WALL MOUNTED SPEAKER. REFER TO ELECTRICAL DRAWINGS FOR ADDITIONAL REQUIREMENTS.

WALL MOUNTED CLOCK. REFER TO ELECTRICAL DRAWINGS FOR ADDITIONAL REQUIREMENTS.

TV TELEVISION OUTLET. SLASH LINE INDICATES MOUNTING IS ABOVE COUNTER. PROVIDE 3/4"C. WITH PULL STRING UP INTO ACCESSIBLE CEILING SPACE U.N.O. PROVIDE CONDUIT BUSHING ABOVE CEILING.

ONE LINE DIAGRAM SYMBOLS

CURRENT TRANSFORMER.

M UTILITY METER.

CIRCUIT BREAKER. AMPERE RATING AND # OF POLES INDICATED.

FUSED SWITCH. AMPERE RATING AND # OF POLES INDICATED.

FUSED PULL-OUT. AMPERE RATING AND # OF POLES INDICATED.

INDICATES DRAW-OUT DEVICE.

FUSE. AMPERE RATING INDICATED. (BUSSMANN DESIGNATION UNO)

TRANSFORMER, DRY TYPE, PAD PAD MOUNT, WITH kVA, PRIMARY AND SECONDARY VOLTAGE, MINIMUM IMPEDANCE, AND "K" RATING AS NOTED. PROVIDE SEPERATELY DERIVED SOURCE GROUNDING PER NEC 250 SIZE AS NOTED. 150° C RISE UNO.

MAGNETIC MOTOR STARTER. NEMA SIZE INDICATED. PROVIDE WITH OPTIONAL FEATURES SCHEDULED.

GROUND. SIZE GROUNDING PER THE LATEST ADOPTED NATIONAL ELECTRICAL CODE. UNO

CONDUCTOR TERMINATION POINT.

BOND TO STRUCTURAL STEEL. SIZE AS NOTED.

BOND TO GAS, WATER, FIRE SPRINKLER PIPING SYSTEMS. SIZE AS NOTED.

PANELBOARD SYMBOL SCHEDULE

T̄ INDICATES PROVIDE NEW 'LOCK-DOG' ON CIRCUIT BREAKER.	▲ CIRCUIT THRU LIGHTING CONTRACTOR. SEE WIRING DIAGRAM(S).
● INDICATES NEW LOAD ADDED TO EXISTING CIRCUIT BREAKER.	ϕ BREAKERS WITH COMMON HANDLE-TIES OR MULTI-POLE BREAKER WHERE HANDLE-TIES ARE NOT AVAILABLE OR PANELBOARD IS EXISTING. PROVIDE PER NEC 210.4(B).
○ INDICATES NEW LOAD AND NEW CIRCUIT BREAKER ADDED TO EXISTING BUSSED SPACE.	C INDICATES CONTINUOUS LOAD.
□ INDICATES EXISTING LOAD REMOVED AND BREAKER TO BECOME SPARE.	N INDICATES NON-CONTINUOUS LOAD.
■ INDICATES EXISTING LOAD AND BREAKER REMOVED AND REPLACED WITH NEW BREAKER AND POSSIBLY NEW LOAD.	SR INDICATES SPARE CIRCUIT BREAKER.
△ INDICATES EXISTING LOAD & CIRCUIT BREAKER TO REMAIN - NO REVISION. EXISTING LOADS MAY HAVE BEEN ESTIMATED.	BSP INDICATES BUSSED SPACE FOR FUTURE CIRCUIT BREAKER.
	M INDICATES MOTOR LOAD.
	R INDICATES GENERAL PURPOSE RECEPTACLE LOAD.

ABBREVIATIONS

AFC	AVAILABLE FAULT CURRENT
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AIC	AMPERE INTERRUPTING CAPACITY
ATS	AUTOMATIC TRANSFER SWITCH
BF	BASE FEED
C	CEILING MOUNTED DEVICE
CAC/CRAC	COMPUTER ROOM AIR CONDITIONING
CF	COMPACT FLUORESCENT
DW	DISHWASHER
DISP	DISPOSAL
EC	EVAPORATIVE COOLER
EDF	ELECTRIC DRINKING FOUNTAIN
EF	EXHAUST FAN
EMT	ELECTRICAL METALLIC TUBING
EP	EMERGENCY PHONE
EUH	ELECTRIC UNIT HEATER
G/GRD	COPPER GROUNDING/BONDING CONDUCTOR
GF/GFP	GROUND FAULT PROTECTED
GFI/GFCI	GROUND FAULT CIRCUIT INTERRUPTER
HID	HIGH INTENSITY DISCHARGED
HPS	HIGH PRESSURE SODIUM
IG	ISOLATED GROUND CONDUCTOR/RECEPTACLE
IM	ICE MACHINE/MAKER
LC	LIGHTING CONTACTOR
LKH	LOCKING HANDLE CIRCUIT BREAKER "LOCK-DOG"
LOTO	LOCK OUT TAG OUT CIRCUIT BREAKER DEVICE
MCC	MOTOR CONTROL CENTER
MH	METAL HALIDE
N	NEUTRAL CONDUCTOR
NF	NON-FUSED
NIC	NOT IN CONTRACT
NL	NIGHT LIGHT
PNL	PANEL
PVC	RIGID PVC CONDUIT, SCHEDULE 40 UNO
RA	RETURN AIR FAN
RAF	RAISED ACCESS FLOOR
RMC	RIGID METAL CONDUIT
SES	SERVICE ENTRANCE SWITCHBOARD
SF	SUPPLY FAN
ST	SHUNT TRIP
SWBD	SWITCHBOARD
TC	TIME CLOCK
TS	TIME SWITCH
UNO	UNLESS NOTED OTHERWISE
VFD	VARIABLE FREQUENCY DRIVE
WH	WATER HEATER
WIU	WHILE IN USE
WP	WEATHERPROOF
WR	WEATHER RESISTANT
XFMR	TRANSFORMER

GENERAL NOTES

1. PRIOR TO ROUGH-IN AND FINAL CONNECTION, VERIFY ELECTRICAL CHARACTERISTICS AND EXACT LOCATION OF EQUIPMENT.
2. COORDINATE THE SCHEDULE OF CONSTRUCTION WITH THE OWNER AND OTHER TRADES (PRIOR TO STARTING ANY WORK).
3. GROUT AND SEAL ALL CONDUIT PENETRATIONS OF WALLS AND FLOOR SLABS TO PRESERVE FIRE RATING AND WATERTIGHT INTEGRITY.
4. PROVIDE #10 NEUTRALS FOR ALL MORE THAN ONE 20A BRANCH CIRCUIT PER CONDUIT UNLESS NOTED OTHERWISE PER DISTRICT STANDARD.
5. INSTALL ALL CONDUITS PARALLEL, PERPENDICULAR AND UNIFORM TO BUILDING ELEMENTS.
6. PROVIDE MANUFACTURER IDENTIFIED ON THE DRAWINGS OR DISTRICT APPROVED EQUAL.
7. ALL UNDERGROUND CONDUIT PATHWAYS SHALL BE PROVIDED WITH LONG SWEEP 45 DEGREE ELBOWS UP INTO MDF AND IDF ROOMS.
8. ALL UNDERGROUND CONDUITS SHALL BE INSTALLED AT LEAST 48" BELOW GRADE WITH CONCRETE SLURRY BACK FILL TO 12" ABOVE CONDUITS.
9. NO MORE THAN 270 DEGREES OF CONDUIT BENDS ARE ALLOWED IN ANY OF THE CONDUIT RUNS. ALL BENDS SHALL BE LONG SWEEP.
10. PROVIDE EXTRA SUPPORTS ON BOTH SIDES OF EACH CONNECTION POINT.
11. IDENTIFY ALL CONDUITS WITH MARKER TAPE.
12. MAKE ALL FINAL EQUIPMENT CONNECTIONS AS REQUIRED.
13. ALL RECEPTACLES NOTED AS "WP-WIU" SHALL BE FURNISHED WITH UL LISTED WEATHERPROOF WHILE-IN-USE HEAVY DUTY METALLIC COVERS. EQUAL TO HUBBEL WPxxE SERIES LIGHTING CATALOG #TL310-WCS.
14. ALL RECEPTACLES NOTED AS "WP" SHALL BE FURNISHED WITH UL LISTED WEATHERPROOF HEAVY DUTY METALLIC COVERS. EQUAL TO HUBBEL WPxx SERIES.
15. ALL RECEPTACLE AND SWITCH TRIM/COVER PLATES SHALL BE STAINLESS STEEL. IVORY OR WHITE PLASTIC ARE NOT ALLOWED.

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Revisions

1	5/22/20	DR COMMENTS

PROJECT NO:
DRAWN BY: RJB
CHK'D BY: HL

ELECTRICAL SYMBOLS AND NOTES

E-000

FILE: J:\2019\191037_GCS_BallFields\Ballfield redone due to existing conditions\E000.dwg
PLOTTED BY: Rick.Baca
PLOTTED: 05.28.2020 - 6:26pm

ELECTRICAL SPECIFICATIONS

1. SUMMARY & GENERAL REQUIREMENTS

1.1 THE WORK UNDER THIS DIVISION INCLUDES FURNISHING ALL LABOR, MATERIAL AND EQUIPMENT NECESSARY FOR THE INSTALLATION AND PLACING INTO OPERATION OF THE ELECTRICAL SYSTEMS AS INDICATED ON THE DRAWINGS.

1.2 THE WORK SHALL ALSO INCLUDE THE COMPLETION OF SUCH MINOR DETAILS OF ELECTRICAL WORK NOT MENTIONED OR SHOWN WHICH ARE NECESSARY FOR THE SUCCESSFUL OPERATION OF ALL ELECTRICAL SYSTEMS DESCRIBED ON THE DRAWINGS OR REQUIRED BY THESE SPECIFICATIONS.

1.3 ALL BRANCH CIRCUITS SHALL BE MINIMUM: #12 THHN/THWN COPPER W/ #12 COPPER BOND IN 1/2" CONDUIT UNLESS NOTED OTHERWISE. ALL CONDUCTORS, REGARDLESS OF SIZE SHALL BE COPPER WITH 90 DEGREE C INSULATION (THHN/THWN OR XHHW). ALL WIRING SHALL BE IN CONDUIT WITH N.E.C. SIZED BONDING CONDUCTORS UNLESS NOTED OTHERWISE.

1.5 PLAN AND INSTALL WORK IN SUCH A MANNER AS TO PREVENT OBSTRUCTIONS, AND KEEP OPENINGS AND PASSAGEWAYS CLEAR. CONSULT GENERAL CONTRACT DRAWINGS FOR CONDITIONS AFFECTING THIS WORK AND VERIFY SPACES IN WHICH WORK WILL BE INSTALLED. NOTIFY ENGINEER IMMEDIATELY OF POSSIBLE CONFLICTS. WHERE INTERFERENCE WITH STRUCTURAL, MECHANICAL OR OTHER FEATURES EXIST, OR WHERE JOB CONDITIONS REQUIRE REASONABLE CHANGES IN LOCATIONS AND ARRANGEMENT OF INDICATED EQUIPMENT, CONDUIT, OUTLETS OR WIRING, THE CONTRACTOR SHALL MAKE SUCH CHANGES WITHOUT EXTRA COST TO OWNER, ARCHITECT OR ENGINEER.

1.7 THE CONTRACTOR SHALL NOT INTERRUPT OR REMOVE ANY EXISTING CIRCUITS OR EQUIPMENT UNLESS NOTED OTHERWISE ON PLANS. ANY DAMAGED OR DISRUPTED CIRCUITS OR EQUIPMENT SHALL BE RESTORED TO LIKE-NEW CONDITION AT NO ADDITIONAL COST TO OWNER, ARCHITECT OR ENGINEER.

1.9 THE CONTRACTOR SHALL PROVIDE NEW, TYPED, PANELBOARD DIRECTORIES FOR ALL NEW AND/OR EXISTING PANELS WITHIN THE SCOPE OF THIS PROJECT. THE DIRECTORIES SHALL INDICATE THE LOAD TYPE AND AREA SERVED. PROVIDE ALL FIELD VERIFICATION WORK AS NECESSARY.

1.11 IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO EXAMINE THE DRAWINGS AND EXISTING PREMISES PRIOR TO BIDDING. NO SUBSEQUENT ALLOWANCES WILL BE MADE FOR NOT BEING KNOWLEDGEABLE OF EXISTING CONDITIONS.

1.12 THE CONTRACTOR SHALL FIELD VERIFY THE SOURCE OF ALL EXISTING LIGHTING AND POWER CIRCUITS (IF ANY), BY PANEL AND POLE NUMBERS, WHETHER EXISTING OR NEW, FOR THE ENTIRE CONTRACT AREA. THE CONTRACTOR SHALL FIELD VERIFY THE SOURCE OF ALL ELECTRICAL EQUIPMENT, I.E. PANELBOARDS, TRANSFORMERS, ETC. AFFECTED FOR THE ENTIRE CONTRACT AREA.

2. CODES AND REQUIREMENTS

2.1 ALL ELECTRICAL WORK SHALL COMPLY WITH THE REQUIREMENTS OF THE AHJ LATEST ADOPTED EDITION OF THE NATIONAL ELECTRICAL CODE, LOCAL BUILDING CODE, OR AS SPECIFIED HEREIN, WHICHEVER IS MORE STRINGENT.

2.2 THE ELECTRICAL CONTRACTOR SHALL COMPLY WITH THE REQUIREMENTS OF THE GENERAL SUPPLEMENTAL CONDITIONS OF THE PROJECT SPECIFICATIONS.

2.3 ALL ELECTRICAL CONDUIT, DEVICES AND EQUIPMENT ARE SHOWN DIAGRAMMATICALLY. DO NOT SCALE PRECISE DETAILS FROM THE DRAWINGS. THE CONTRACTOR SHALL FIELD VERIFY ACTUAL LOCATIONS WITH ARCHITECT / OWNER PRIOR TO ANY ROUGH IN.

2.4 THE ELECTRICAL CONTRACTOR SHALL OBTAIN AND PAY FOR PERMITS, FEES, INSPECTIONS, AND THE LIKE.

3. EQUIPMENT

3.1 THE ELECTRICAL CONTRACTOR SHALL PROVIDE ALL EQUIPMENT AND ACCESSORIES NECESSARY, WHETHER SPECIFICALLY STATED OR NOT, TO MAKE THE REQUIRED ELECTRICAL SYSTEMS COMPLETE AND OPERATIONAL.

3.2 ALL EQUIPMENT PROVIDED SHALL BE NEW EXCEPT AS OTHERWISE STATED ON THE DRAWINGS. ALL EQUIPMENT PROVIDED SHALL BE UL LISTED WHEN SUCH STANDARDS EXIST FOR THE TYPE OF EQUIPMENT FURNISHED AND SHALL BE ACCEPTABLE FOR INSTALLATION BY THE LOCAL BUILDING SAFETY AND FIRE DEPARTMENT AUTHORITIES.

4. WARRANTY

4.1 THE ELECTRICAL CONTRACTOR SHALL PROVIDE FOR THE OWNER A ONE-YEAR (FROM THE DATE OF FINAL ACCEPTANCE) WARRANTY AND GUARANTEE OF ALL ELECTRICAL EQUIPMENT AND SYSTEMS PROVIDED UNDER THIS CONTRACT. ALL DEFECTIVE EQUIPMENT OR MATERIALS WITH THE EXCEPTION OF LIGHTING FIXTURE LAMPS SHALL BE REPLACED OR REPAIRED BY THE ELECTRICAL CONTRACTOR IN A TIMELY FASHION, WITH NO ADDITIONAL COST TO THE OWNER.

5. CONDUIT

5.1 ALL CONDUCTORS SHALL BE ENCLOSED BY CONDUIT SIZED IN ACCORDANCE WITH THE PROPER TABLES CONTAINED IN THE NATIONAL ELECTRICAL CODE FOR THE TYPE OF INSULATION USED. CONDUIT SHALL BE A MINIMUM OF 1/2" EXCEPT FOR FACTORY FURNISHED LIGHTING FIXTURE CONDUIT, WHICH MAY BE 3/8".

5.1.2 RIGID PVC CONDUIT MINIMUM SCHEDULE 40 SHALL BE PERMITTED ONLY UNDERGROUND OR AS NOTED ON DRAWINGS. PROVIDE TAPE WRAPPED RIGID STEEL ELBOWS AND RISERS (NO MINIMUM SIZE). UNDERGROUND CHANGE IN DIRECTION SHALL BE MADE WITH MANUFACTURER ELBOWS. FIELD BENDING WITH HEAT IS NOT ALLOWED. SIZE AND PROVIDE EQUIPMENT GROUNDING CONDUCTOR PER 250-122 AND INCREASE CONDUIT SIZE IF REQUIRED.

5.1.3 ELECTRICAL METALLIC TUBING (EMT) SHALL BE UTILIZED FOR ALL DRY, ABOVE GRADE OR ABOVE FLOOR APPLICATIONS IN ACCORDANCE WITH ARTICLE 358 OF THE NATIONAL ELECTRICAL CODE. COUPLINGS AND CONNECTORS SHALL BE COMPRESSION-TYPE, STEEL, WATERTIGHT FITTINGS, WHERE APPLICABLE, SHALL BE USED FOR EMT. PROVIDE GROUND CONDUCTOR FOR ALL RUNS OF EMT CONDUIT.

6. CONDUCTORS

6.1 MINIMUM SIZE SHALL BE #12 AWG EXCEPT FOR CONTROL CIRCUITS WHICH MAY BE #14 AWG OR SIGNAL CIRCUITS WHICH SHALL BE AS INDICATED. ALL CONDUCTORS SHALL BE COPPER WITH THE 90 DEGREE C INSULATION TYPES AS INDICATED ON THE DRAWINGS OR AS SPECIFIED BELOW. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE AND INCREASE THE CONDUCTOR SIZE AS NECESSARY TO LIMIT BRANCH CIRCUIT VOLTAGE DROP TO A MAXIMUM OF 3% AND FEEDER VOLTAGE DROP TO A MAXIMUM OF 2%.

6.2 CONDUCTOR INSULATION SHALL BE OF A TYPE RECOGNIZED BY THE NATIONAL ELECTRICAL CODE AND AS APPROVED FOR ITS PARTICULAR APPLICATION OR AS REQUIRED BY THE LOCAL BUILDING SAFETY AUTHORITIES, WHICHEVER IS MORE STRINGENT. UNLESS NOTED OTHERWISE ON THE DRAWINGS. CONDUCTOR INSULATION TYPE SHALL BE THHN/THWN-2 OR XHHW-2, 90 DEGREE C RATED.

6.3 SPLICES AND MAKE-UP JOINTS FOR #8 AND SMALLER CONDUCTORS SHALL BE EQUAL PRESSURE TYPE SOLDER-LESS CONNECTORS (BUCHANAN, SCOTCHLOK, WING NUT OR AS APPROVED). SPLICES OR MAKE-UP JOINTS #6 AWG AND LARGER SHALL BE MADE USING APPROVED SOLDER-LESS TYPE PRESSURE CONNECTORS (BURNDY OR APPROVED) OR HYDRAULIC COMPRESSION TYPE BARREL SPLICES WHEN SPECIFIED ON THE DRAWINGS. ALL UNINSULATED TYPE SPLICES SHALL BE INSULATED USING APPROVED HEAT OR COLD SHRINK COVERS FOLLOWED BY A MINIMUM OF THREE ½ LAPPED LAYERS OF PLASTIC ELECTRICAL TAPE (SCOTCH #33+). IN ADDITION SPLICES OR JOINTS IN DAMP OR WET LOCATIONS SHALL FURTHER BE COVERED BY THREE ½ LAPPED LAYERS OF RUBBER TAPE. FEEDERS LARGER THAN #6 AWG SHALL NOT BE SPLICED (INSTALLED IN ONE CONTINUOUS RUN) UNLESS SPECIFICALLY NOTED OR IMPLIED ON THE DRAWINGS.

6.4 ALL WIRING THROUGHOUT SHALL BE COLOR CODED AS FOLLOWS:

	480V SYSTEM	208V SYSTEM
A PHASE	BROWN	BLACK
B PHASE	ORANGE	RED
C PHASE	YELLOW	BLUE
NEUTRAL	GREY	WHITE
GROUND	GREEN	GREEN
ISOLATED GROUND	---	GREEN W/YELLOW STRIPE

6.5 GROUNDING CONDUCTORS SHALL BE PROVIDED IN ALL CONDUIT RUNS. GROUNDING CONDUCTORS SHALL BE PROVIDED IN THE SIZES AS INDICATED ON THE DRAWINGS OR THE MINIMUM SIZE AS ALLOWED BY THE N.E.C. IF NO PARTICULAR SIZE IS NOTED.

7. SEPARATE CONDUIT SYSTEMS

7.1 EACH SYSTEM SHALL BE CONTAINED IN A SEPARATE CONDUIT SYSTEM. THIS INCLUDES EACH POWER SYSTEM, EACH LIGHTING SYSTEM, EACH SIGNAL SYSTEM OF WHATEVER NATURE, TELEPHONE / DATA, CONTROL SYSTEM, FIRE ALARM SYSTEM, FUTURE EMS, SECURITY SYSTEM, ETC.

8. FEEDER AND BRANCH CIRCUITS

8.1 RISER DIAGRAMS, ONE LINE DIAGRAMS AND CIRCUIT RUNS ARE INDICATIVE ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT ROUTING OF FEEDERS AND BRANCH CIRCUITS SO AS TO BEST FIT THE LAYOUT OF THE JOB.

8.2 A LAYOUT OF BRANCH CIRCUIT WIRING AND ROUTING IS INDICATED.

8.3 BRANCH PANEL CIRCUITS ARE NUMBERED TO MATCH NEMA POLE NUMBERING SYSTEM: POLES 1 AND 2 - PHASE A; POLES 3 AND 4 - PHASE B; POLES 5 AND 6 - PHASE C; ETC. ACTUAL FIELD NUMBERING OF CIRCUIT DIRECTORIES SHALL BE PHASED AND POLE CONNECTED AS SHOWN.

8.4 WHERE SPECIFIC CONDUCTOR SIZE IS REQUIRED BY THE DRAWINGS AND SPECIFICATIONS AND IS LARGER THAN CODE MINIMUM, THE LARGER CONDUCTOR SIZE SHALL BE USED.

8.6 CONDUCTORS FOR BRANCH CIRCUIT LIGHTING, RECEPTACLE, POWER AND MISCELLANEOUS SYSTEMS MUST BE A MINIMUM OF #12 AWG. WIRE INDICATED SPECIFICALLY TO BE LARGER THAN #12 AWG MUST BE INCREASED THE ENTIRE LENGTH OF THE CIRCUIT.

8.7 CONDUCTOR SIZES FOR LIGHTING, RECEPTACLES, AND SMALL MOTOR BRANCH CIRCUITS WITH LESS THAN 20A CONNECTED LOAD MAY NOT BE SHOWN. CONDUCTORS FOR SUCH CIRCUITS ARE SIZED AS FOLLOWS: FOR BRANCH CIRCUITS (120/208V) 65 FEET IN LENGTH FROM BRANCH CIRCUIT PANEL TO CENTER OF LOAD, NOT SMALLER THAN #12 AWG, UP TO 100 FEET NOT SMALLER THAN #10 AWG, UP TO 165 FEET NOT SMALLER THAN #8 AWG.

8.9 PROVIDE PROPER SIZE AND TYPE OF FEEDS FOR ALL ACCEPTED EQUIPMENT AND PROPER SOURCES FOR ALL SUCH ITEMS INDICATED, CHECKING DRAWINGS OF ALL TRADES TO ENSURE INCLUSION OF ALL ITEMS.

8.10 WHERE MULTIPLE BRANCH CIRCUITS ARE RUN IN THE SAME CONDUIT, EACH SET OF (3) BRANCH CIRCUITS REPRESENTING PHASE A, B, C, SHALL HAVE A SEPARATE NEUTRAL CONDUCTOR.

9. BOXES

9.5 ALL JUNCTION BOXES AND PULL BOXES SHALL BE CLEARLY LABELED WITH INDELIBLE, BLACK INK TO INDICATE THE PANEL IDENTIFICATION & CIRCUIT NUMBER OR BUS DUCT IDENTIFICATION & SWITCH NUMBER, ETC. IN ADDITION, ALL CONDUCTORS INSIDE THE PULL OR JUNCTION BOXES AND ALL CONDUCTORS BROUGHT TO DEVICE OUTLET BOXES SHALL BE WIRE TAGGED TO INDICATE THE CIRCUIT OR SWITCH NUMBER.

9.6 ALL AUXILIARY CONDUIT AND BOX SYSTEMS, INCLUDING COMMUNICATIONS OR DATA SHALL BE CLEARLY LABELED TO INDICATE FUNCTION AND USE. LABEL ALL CONDUIT SYSTEMS AS INDICATED ABOVE AND LABEL THE COVERS OF ALL JUNCTION OR PULL BOXES USING INDELIBLE, BLACK INK.

10. DEVICES

10.1 ALL WIRING DEVICES SHALL BE UL APPROVED AND OF THE TYPE AND NUMBER SHOWN ON THE DRAWINGS. ALL NEW DEVICES SHALL BE 20A SPECIFICATION GRADE RATED AT 277V OR 120V AS NECESSARY.

10.2 ALL DEVICES SHALL BE WHITE COLOR OR AS OTHERWISE REQUIRED BY THE ARCHITECT OR OWNER. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO CONFIRM ALL DEVICE AND PLATE COLORS WITH THE ARCHITECT OR OWNER PRIOR TO PURCHASE AND INSTALLATION.

10.2.1 SPECIFICATION GRADE RECEPTACLES, HUBBELL 5362-W OR EQUAL BY LEVITON.

10.3 DEVICE PLATES SHALL BE STAINLESS STEEL, AS MANUFACTURED BY THE DEVICE MANUFACTURER. COORDINATE WITH ARCHITECT.

11. GROUNDING

11.1 FURNISH AND INSTALL GROUNDING AND GROUNDING CONDUCTORS AS SPECIFIED HEREIN AND AS SHOWN ON THE DRAWINGS.

11.2 ALL PANELBOARD CABINETS, EQUIPMENT, ENCLOSURES, AND CONDUIT SYSTEMS SHALL BE GROUNDED SECURELY IN ACCORDANCE WITH PERTINENT SECTIONS OF ARTICLE 250 OF NEC, AS AMENDED BY ANY LOCAL CODES. CONDUCTORS SHALL BE COPPER. ALL ELECTRICALLY OPERATED EQUIPMENT SHALL BE BONDED TO THE GROUNDED CONDUIT SYSTEM. ALL NON-CURRENT CARRYING CONDUCTIVE SURFACES THAT ARE LIKELY TO BECOME ENERGIZED AND SUBJECT TO PERSONAL CONTACT SHALL BE GROUNDED BY ONE OR MORE OF THE METHODS DETAILED IN ARTICLE 250 NEC. ALL GROUND CONNECTIONS SHALL HAVE CLEAN CONTACT SURFACES. INSTALL ALL GROUNDING CONDUCTORS IN CONDUIT AND MAKE CONNECTIONS READILY ACCESSIBLE FOR INSPECTION. FURNISH AND INSTALL GROUNDING ELECTRODES AS DESCRIBED ON THE DRAWINGS.

11.3 GROUNDING OF METAL RACEWAYS SHALL BE ASSURED BY MEANS OF GROUNDING BUSHINGS ON FEEDER CONDUIT TERMINATIONS AT THE SERVICE ENTRANCE, DISTRIBUTION SWITCHBOARDS AND PANELBOARDS, AND BY MEANS OF A CONTINUOUS, STRANDED, COPPER GROUNDING WIRE EXTENDED FROM THE GROUND BUS IN THE ENCLOSURE TO THE CONDUIT GROUNDING BUSHINGS.

11.4 A SEPARATE INSULATED GROUNDING CONDUCTOR, SIZED PER NEC 250-122, SHALL BE INSTALLED IN ALL ELECTRICAL METALLIC TUBING (EMT).

11.5 PROVIDE SEPARATE, INSULATED, ISOLATED GROUNDING CONDUCTORS FOR ALL ISOLATED GROUND BRANCH CIRCUITS OR FEEDERS.

12. PANELBOARDS

12.1 FURNISH AND INSTALL BRANCH CIRCUIT PANELBOARDS AS SPECIFIED HEREIN AND AS INDICATED ON THE DRAWINGS.

12.2 ALL BUS BARS SHALL BE COPPER, LOCATED IN THE REAR OF THE PANELBOARD CABINET. CIRCUIT BREAKERS SHALL BE BOLTED INTO SUITABLE SUPPORTING MEMBERS AT THE FRONT OF THE CABINET WHICH ARE CONNECTED WITH SUITABLE LUGS TO THE BUS BARS IN THE REAR OF THE CABINET. INDIVIDUAL CIRCUIT BREAKERS SHALL BE REMOVABLE FROM THE CABINET WITHOUT DISTURBING ADJACENT UNITS OR SUPPORTING MEMBERS.

12.3 LOCKS SHALL BE PROVIDED ON ALL PANELBOARDS. ALL LOCKS SHALL BE KEYED ALIKE. LOCKING HASPS SHALL ALSO BE PROVIDED WITH ALL PANELBOARDS. HASPS SHALL BE INSTALLED USING POP RIVETS.

12.4 PANELBOARDS SHALL BE EQUIPPED WITH FULL NEUTRAL AND GROUND BUSSES. SEPARATE ISOLATED GROUND BUSES SHALL BE PROVIDED FOR ISOLATED GROUND PANELBOARDS, AS NOTED ON SCHEDULES.

12.5 ALL PANELBOARDS SHALL HAVE DOOR-IN-DOOR TRIM TO ALLOW ACCESS TO WIRE WAY AND LINE/LOAD LUGS WITHOUT REMOVING FRONT COVERS. THE HINGES SHALL BE CONTINUOUS PIANO HINGE TYPE.

12.6 ALL PANELBOARD ENCLOSURES SHALL HAVE BLANK END-WALLS. THE USE OF KNOCK-OUT TYPE END-WALLS IS PROHIBITED. PROVIDE NEMA TYPE ENCLOSURES NOTED AN SCHEDULES.

12.7 MINIMUM INTERRUPTING RATING OF CIRCUIT BREAKERS SHALL BE 10,000 AMPS FOR 120/208V PANELBOARDS AND 14,000 AIC FOR 277/480V PANELBOARDS. REFER TO THE DRAWINGS FOR HIGHER INTERRUPTING RATING REQUIREMENTS.

12.8 ACCEPTABLE MANUFACTURERS ARE GENERAL ELECTRIC, WESTINGHOUSE/CUTLER HAMMER, SIEMENS, OR SQUARE D. ELECTRICAL CONTRACTOR SHALL PROVIDE MATCHING MANUFACTURERS OF EXISTING EQUIPEMENT WHEN APPLICABLE.

15. LIGHTING, CONTROLS AND ACCESSORIES

15.1 LIGHTING AND CONTROLS SHALL BE PROVIDED AS SPECIFIED. NO SUBSTITUTIONS.

19. CLEANUP OF PREMISES

19.1 CONTRACTOR SHALL AT ALL TIMES KEEP THE PREMISES CLEAR OF WASTE MATERIALS AND DEBRIS CAUSED BY HIS EMPLOYEES AND OPERATION. EQUIPMENT NOT REQUIRED IN THE WORK SHALL BE REMOVED PRIOR TO THE TERMINATION OF THE CONTRACT.

20. TESTS AND INSPECTIONS

20.1 CONTRACTOR SHALL TEST WIRING AND DEVICES AS SECTIONS ARE COMPLETED.

20.2 FURNISH ALL METERS, CABLE, CONNECTIONS AND APPARATUS NECESSARY FOR MAKING TESTS.

1.20.3 TEST SYSTEM FOR SHORTS AND GROUNDS. FAULTY WIRING SHALL BE REMOVED AND REPLACED. ANY DEVICE, APPARATUS OR FIXTURE INSTALLED SHOWING SUBSTANDARD PERFORMANCE SHALL BE REMOVED AND REPLACED AS DIRECTED BY THE ENGINEER.

20.5 AFTER THE ELECTRICAL WIRING SYSTEM INSTALLATION IS COMPLETED AND AT SUCH TIME AS THE ARCHITECT/ENGINEER OR HIS AUTHORIZED REPRESENTATIVE MAY DIRECT, THE CONTRACTOR SHALL CONDUCT AN OPERATING TEST FOR APPROVAL. EQUIPMENT SHALL BE DEMONSTRATED TO OPERATE IN ACCORDANCE WITH REQUIREMENTS OF SPECIFICATIONS. TEST SHALL BE PERFORMED IN PRESENCE OF ARCHITECT OR HIS REPRESENTATIVE.

21. LABELING

21.1 LABELS SHALL BE ENGRAVED, BLACK ON WHITE MELAMINE PLASTIC LAMINATE, 1/16in MINIMUM THICKNESS FOR SIGNS UP TO 20in2 OR 8in LONG; 1/8in THICK FOR LARGER SIZES. ENGRAVED LEGEND SHALL BE IN WHITE LETTERS ON BLACK FACE WITH MINIMUM 3/16in HIGH LETTERS. LABELS SHALL BE PUNCHED AND FASTENED TO EQUIPMENT WITH ALUMINUM RIVETS OR SELF TAPPING STAINLESS STEEL SCREWS OR #10/32 STAINLESS STEEL MACHINE SCREWS WITH NUTS, FLAT AND LOCK WASHERS.

21.2 LABEL EQUIPMENT WITH NAME, AMPERAGE, VOLTAGE, PHASE, AND WIRES (I.E. PANEL "A", 400A, 120/208V, 3ø,4W).

21.3 EQUIPMENT TO BE LABELED SHALL INCLUDE DISCONNECTS, CONTACTORS, AND TIMESWITCHES. LABEL OTHER EQUIPMENT AS NOTED ON PLANS.

21.4 ALL JUNCTION BOXES SHALL BE LABELED WITH CIRCUITS INSTALLED (I.E. 'LB1'-1,3,5) WITH INDELIBLE INK ON THE BOX COVER.

22. DRAWINGS OF RECORD (AS-BUILT)

22.1 AS-BUILT DRAWINGS SHALL BE SUBMITTED IN ACCORDANCE WITH AND IF REQUIRED BY DIVISION 1 - GENERAL REQUIREMENTS.

23. INSTRUCTIONS

23.1 CONTRACTOR SHALL INSTRUCT THE OWNER IN THE PROPER OPERATING AND MAINTENANCE OF THE EQUIPMENT.

23.2 CONTRACTOR SHALL PROVIDE TWO (2) SETS OF OPERATING AND MAINTENANCE MANUALS FOR EACH PIECE OF EQUIPMENT PROVIDED BY THIS DISCIPLINE, ONLY WHEN SUCH MANUALS ARE AVAILABLE FROM THE MANUFACTURER.

23.3 ALL MANUALS TO BE BOUND IN A 3-HOLE BINDER AND TABULATED IN AN ORDERLY MANNER.

END OF SPECIFICATIONS

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Revisions

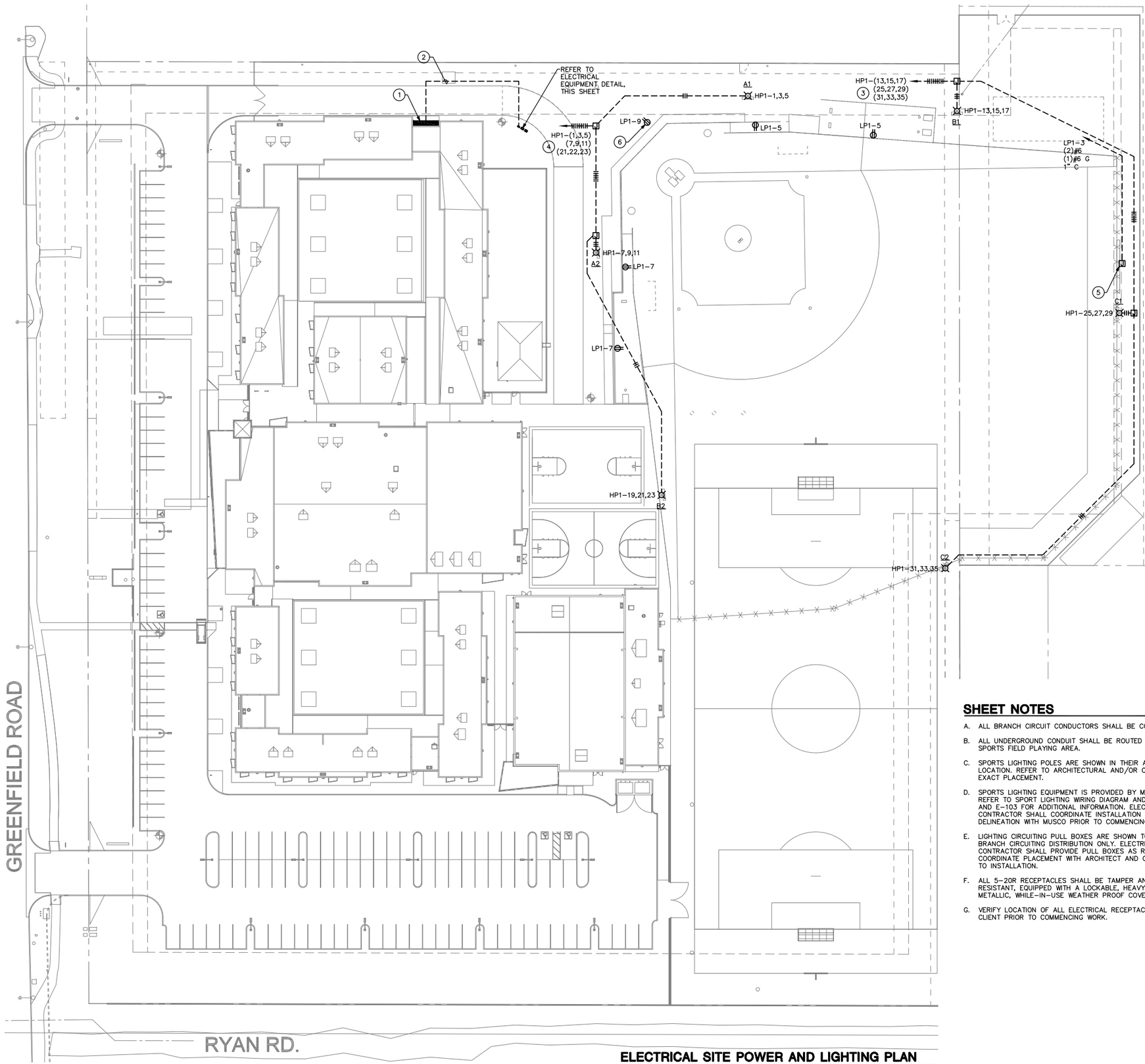
1 5/22/20 DR COMMENTS

PROJECT NO:
DRAWN BY: RJB
CHK'D BY: HL

ELECTRICAL SPECS

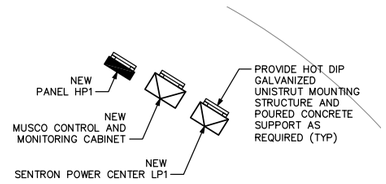
E-001

FILE: J:\2019\191037_GCS_BallFields\Ballfield redone due to existing conditions\E000.dwg
PLOTTED: 05.28.2020 - 6:32pm PLOTTED BY: Rick.Baca



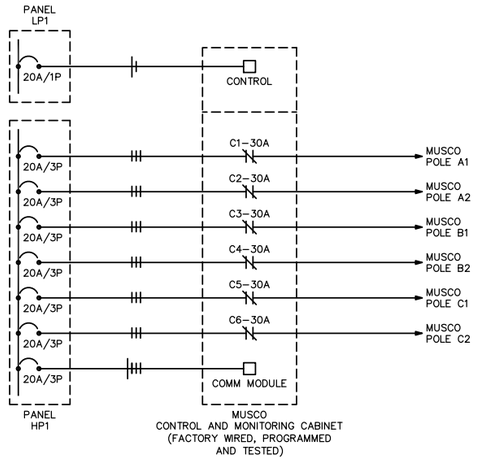
ELECTRICAL SITE POWER AND LIGHTING PLAN

SCALE: 1/32" = 1'-0"



ELECTRICAL EQUIPMENT DETAIL

SCALE: 1/4" = 1'-0"



SPORTS LIGHTING WIRING DIAGRAM

SCALE: NTS

SHEET NOTES

A. ALL BRANCH CIRCUIT CONDUCTORS SHALL BE COPPER.

B. ALL UNDERGROUND CONDUIT SHALL BE ROUTED AROUND SPORTS FIELD PLAYING AREA.

C. SPORTS LIGHTING POLES ARE SHOWN IN THEIR APPROXIMATE LOCATION. REFER TO ARCHITECTURAL AND/OR CIVIL PLANS FOR EXACT PLACEMENT.

D. SPORTS LIGHTING EQUIPMENT IS PROVIDED BY MUSCO LIGHTING. REFER TO SPORT LIGHTING WIRING DIAGRAM AND SHEETS E-102 AND E-103 FOR ADDITIONAL INFORMATION. ELECTRICAL CONTRACTOR SHALL COORDINATE INSTALLATION AND SCOPE DELINEATION WITH MUSCO PRIOR TO COMMENCING WORK.

E. LIGHTING CIRCUITING PULL BOXES ARE SHOWN TO INDICATE BRANCH CIRCUITING DISTRIBUTION ONLY. ELECTRICAL CONTRACTOR SHALL PROVIDE PULL BOXES AS REQUIRED. COORDINATE PLACEMENT WITH ARCHITECT AND CLIENT PRIOR TO INSTALLATION.

F. ALL 5-20R RECEPTACLES SHALL BE TAMPER AND WEATHER RESISTANT, EQUIPPED WITH A LOCKABLE, HEAVY DUTY METALLIC, WHILE-IN-USE WEATHER PROOF COVER.

G. VERIFY LOCATION OF ALL ELECTRICAL RECEPTACLES WITH CLIENT PRIOR TO COMMENCING WORK.

KEYED NOTES (#)

1. EXISTING SERVICE ENTRANCE SECTION. REFER TO ONE-LINE DIAGRAM FOR ADDITIONAL INFORMATION.
2. NEW UNDERGROUND FEEDER TO SERVE NEW PANEL HP1. REFER TO ONE-LINE DIAGRAM FOR ADDITIONAL INFORMATION.
3. BRANCH CIRCUIT HOMERUN SHALL BE COMPRISED OF THE FOLLOWING CIRCUITS AND CONDUCTORS IN (1) 1-1/4" NON METALLIC CONDUIT.
   HP1-13,15,17 = (3)#10
   HP1-25,27,29 = (3)#8
   HP1-31,33,35 = (3)#8
   BRANCH CIRCUITS SHALL UTILIZE (1) COMMON #8 EQUIPMENT GROUND CONDUCTOR.
4. BRANCH CIRCUIT HOMERUN SHALL BE COMPRISED OF THE FOLLOWING CIRCUITS AND CONDUCTORS IN (1) 1-1/4" NON METALLIC CONDUIT.
   HP1-1,3,5 = (3)#10
   HP1-7,9,11 = (3)#10
   HP1-19,21,23 = (3)#10
   BRANCH CIRCUITS SHALL UTILIZE (1) COMMON #10 EQUIPMENT GROUND CONDUCTOR.
5. JUNCTION BOX WITH 120V CIRCUIT TO SERVE SCORE BOARD. COORDINATE LOCATION WITH SCOREBOARD INSTALLER PRIOR TO COMMENCING WORK.
6. PROVIDE 30" HIGH, SINGLE GANG, POWER PEDESTAL, MANFACTURED BY PEDOC #1P30V, OR EQUAL. MOUNT DEVICE IN PEDESTAL PER MANUFACTURERS SPECIFICATIONS. PROVIDE FLUSH WITH GRADE, CONCRETE MOUNTING BASE WITH BOLT CIRCLE PER MANUFACTURERS SPECIFICATIONS.

ENERGY SYSTEMS DESIGN
7135 East Camelback Road
Suite 275
Scottsdale AZ 85251
P: 480.481.4800

Design Contact:
RICK BACA

Project #
191037

DEUTSCH ARCHITECTURE GROUP

Registered Professional Engineer (Electrical)
CERTIFICATE NO.
51498
HALLEH LANDON
Date Signed 5/7/2020
ARIZONA U.S.A.
EXPIRES 9-30-2022

4600
EAST INDIAN SCHOOL RD
PHOENIX, ARIZONA 85018
602-840-2929 P
602-840-6646 F

TITAN SOLAR FIELD - GCS
GREENFIELD CAMPUS

4341 S. Greenfield Rd.

Revisions	
1	5/22/20 DR COMMENTS

PROJECT NO:	
DRAWN BY:	RJB
CHK'D BY:	HL

ELECTRICAL SITE PLAN

E-101

PLOTTED: 05.28.2020 - 6:35pm PLOTTED BY: Rick.Baca FILE: J:\2019\191037_GCS_BallFields\Ballfield redone due to existing conditions\E101.dwg

<UTF-8>

Control System Summary

Project Specific Notes:

Project Information

Project #:	181129
Project Name:	Gilbert Christian K-8 Soccer Softball
Date:	01/09/20
Project Engineer:	Vashon Alexander
Sales Representative:	John Abney
Control System Type:	LED C&M
Communication Type:	PowerLine-ST
Scan:	181129C
Document ID:	181129P1V3-0109104505
Distribution Panel Location or ID:	Service 1
Total # of Distribution Panel Locations for Project:	1
Design Voltage/Hertz/Phase:	480/60/3
Control Voltage:	120

Equipment Listing

DESCRIPTION	APPROXIMATE SIZE
1.Control and Monitoring Cabinet	24 X 48

	QTY	SIZE
Total Contactors	6	30 AMP
Total Off/On/Auto Switches:	1	

Materials Checklist

Contractor/Customer Supplied:

- ❑ A dedicated control circuit must be supplied per distribution panel location.
  - — If the control voltage is NOT available, a control transformer is required.
- ❑ Electrical distribution panel to provide overcurrent protection for circuits
  - — HID rated or D-curve circuit breaker sized per full load amps on Circuit Summary by Zone Chart
- ❑ Wiring:
  - — See chart on page 2 for wiring requirements
  - — Equipment grounding conductor and splices must be insulated. (per circuit)
  - — Lightning ground protection (per pole), if not Musco supplied.
- ❑ Electrical conduit wireway system
  - — Entrance hubs rated NEMA 4; must be die-cast zinc, PVC, or copper-free die-cast aluminum
- ❑ Mounting hardware for cabinets
- ❑ Breaker lock-on device to prevent unauthorized power interruption to control power and powerline connection (if present)
- ❑ Anti-corrosion compound to apply to ends of wire, if necessary

Call Control-Link Central™ operations center at 877/347-3319 to schedule activation of the control system upon completion of the installation. Note: Activation may take up to 1 1/2 hours

IMPORTANT NOTES

1. Please confirm that the design voltage listed above is accurate for this facility. Design voltage/phase is defined as the voltage/phase being connected and utilized at each lighting pole's electrical components enclosure disconnect. Inaccurate design voltage/phase can result in additional costs and delays. Contact your Musco sales representative to confirm this item.
2. In a 3 phase design, all 3 phases are to be run to each pole. When a 3 phase design is used Musco's single phase luminaires come pre-wired to utilize all 3 phases across the entire facility.
3. One contactor is required for each pole. When a pole has multiple circuits, one contactor is required for each circuit. All contactors are UL 100% rated for the published continuous load. All contactors are 3 pole.
4. If the lighting system will be fed from more than one distribution location, additional equipment may be required. Contact your Musco sales representative.
5. A single control circuit must be supplied per control system.
6. Size overcurrent devices using the full load amps column of the Circuit Summary By Zone chart- Minimum power factor is 0.9.

NOTE: Refer to Installation Instructions for more details on equipment information and the installation requirements

Form: T-6030-1

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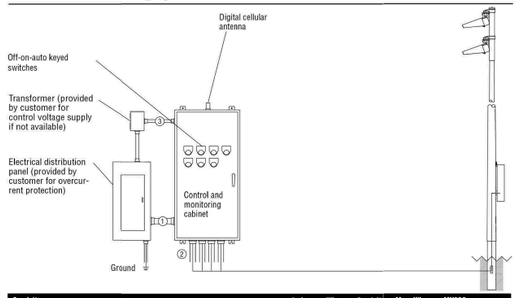
Control System Summary

Gilbert Christian K-8 Soccer Softball / 181129 - 181129C
Service 1 - Page 2 of 4

Control•Link. Control and Monitoring System



Conduit ID	Description	# of Wires	Wire (AWG)	Conduit (in)	Max. Wire Length (ft)	MUSCO Supplied	Notes
1	Line power to contactors, and equipment grounding conductor	*A	*B	*C	N/A	No	A-E
1	Power-line Communication Connection (dedicated, 20A)	*A	12	*C	N/A	No	A-E
2	Load power to lighting circuits, and equipment grounding conductor	*A	*B	*C	N/A	No	A-E
3	Control power (dedicated 20A)	3	12	*C	N/A	No	C,E

* Notes: R60-100-00_A

A. See voltage and phasing per the notes on cover page.
B. Calculate per load and voltage drop.
C. All conduit diameters should be per code unless otherwise specified to allow for connector size.
D. Equipment grounding conductor and any splices must be insulated.
E. Refer to control and monitoring system installation instructions for more details on equipment information and the installation requirements.

IMPORTANT: Control wires (3) must be in separate conduit from line and load power wires (1, 2).

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Control System Summary

Gilbert Christian K-8 Soccer Softball / 181129 - 181129C
Service 1 - Page 3 of 4

SWITCHING SCHEDULE

Field/Zone Description	Zones
Baseball	1

CONTROL POWER CONSUMPTION	
120V Single Phase	
VA loading of Musco Supplied Equipment	INRUSH: 2043.0
	SEALED: 231.8

CIRCUIT SUMMARY BY ZONE

POLE	CIRCUIT DESCRIPTION	# OF FIXTURES	# OF DRIVERS	*FULL LOAD AMPS	CONTACTOR SIZE (AMPS)	CONTACTOR ID	ZONE
A1	Baseball	4	4	**7.7**	30	C1	1
A2	Baseball	4	4	**7.7**	30	C2	1
B1	Baseball	6	6	**12.8**	30	C3	1
B2	Baseball	6	6	**12.8**	30	C4	1
C1	Baseball	6	6	**10.9**	30	C5	1
C2	Baseball	6	6	**10.9**	30	C6	1

*Full Load Amps based on amps per driver.

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Control System Summary

Gilbert Christian K-8 Soccer Softball / 181129 - 181129C
Service 1 - Page 4 of 4

PANEL SUMMARY

CABINET #	CONTROL MODULE LOCATION	CONTACTOR ID	CIRCUIT DESCRIPTION	FULL LOAD AMPS	DISTRIBUTION PANEL ID (BY OTHERS)	CIRCUIT BREAKER POSITION (BY OTHERS)
1	1	C1	Pole A1	7.66		
1	1	C2	Pole A2	7.66		
1	1	C3	Pole B1	12.82		
1	1	C4	Pole B2	12.82		
1	1	C5	Pole C1	10.87		
1	1	C6	Pole C2	10.87		

ZONE SCHEDULE

			CIRCUIT DESCRIPTION	
ZONE	SELECTOR SWITCH	ZONE DESCRIPTION	POLE ID	CONTACTOR ID
Zone 1	1	Baseball	A1	C1
			A2	C2
			B1	C3
			B2	C4
			C1	C5
			C2	C6

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Ph: 480.481.4800

Design Contact:
RICK BACA

Project #
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4600
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TITAN SOLAR FIELD - GCS
GREENFIELD CAMPUS
4341 S. Greenfield Rd.

Revisions

1 5/22/20 DR COMMENTS

PROJECT NO:
DRAWN BY: RJB
CHK'D BY: HL

MUSCO
BALL FIELD
DESIGN
DOCUMENTS

E-102

FILE: J:\2019\191037_GCS_BallFields\Ballfield redone due to existing conditions\E102.dwg
PLOTTED BY: Rick.Baca
PLOTTED: 05.28.2020 - 6:38pm

Gilbert Christian K-8 Soccer Softball

Gilbert, AZ.

Lighting System

Pole / Fixture Summary

Pole ID	Pole Height	Mtg Height	Fixture Qty	Luminaire Type	Load	Circuit
A1-A2	70'	70'	1	TLC-LED-1200	1.17 kW	A
		70'	2	TLC-LED-1500	2.86 kW	A
		16'	1	TLC-BT-575	0.58 kW	A
B1-B2	70'	70'	5	TLC-LED-1500	7.15 kW	A
		16'	1	TLC-BT-575	0.58 kW	A
C1-C2	70'	70'	4	TLC-LED-1500	5.72 kW	A
		16'	2	TLC-BT-575	1.15 kW	A
6			32		38.40 kW	

Circuit Summary

Circuit	Description	Load	Fixture Qty
A	Softball	38.4 kW	32

Fixture Type Summary

Type	Source	Wattage	Lumens	L90	L80	L70	Quantity
TLC-BT-575	LED 5700K - 75 CRI	575W	52,000	>120,000	>120,000	>120,000	8
TLC-LED-1500	LED 5700K - 75 CRI	1430W	160,000	>120,000	>120,000	>120,000	22
TLC-LED-1200	LED 5700K - 75 CRI	1170W	136,000	>120,000	>120,000	>120,000	2

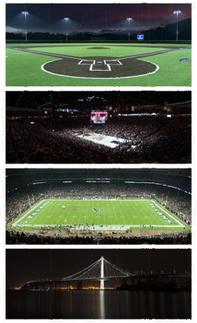
Light Level Summary

Calculation Grid Summary

Grid Name	Calculation Metric	Illumination Ave	Min	Max	Max/Min	Ave/Min	Circuits	Fixture Qty
Blanket Grid	Horizontal Illuminance	6.10	0.09	32.7	347.15	64.88	A	32
LF Bull Pen	Horizontal	21.3	13	27.9	2.15	1.64	A	32
Property Line	Horizontal	0.33	0	3.16	0.00		A	32
Property Line	Max Candela (by Fixture)	7068	0.26	37619	142305.50	26773.06	A	32
Property Line	Max Vertical Illuminance Metric	0.46	0	3.11	0.00		A	32
Softball (Infield)	Horizontal Illuminance	39.6	29.3	48.7	1.66	1.35	A	32
Softball (Outfield)	Horizontal Illuminance	29.6	17.4	42.3	2.43	1.70	A	32

ENGINEERED DESIGN By: Ryan A. Marsh, LC • File #181129C-ProdR3 • 27-May-20

From Hometown to Professional

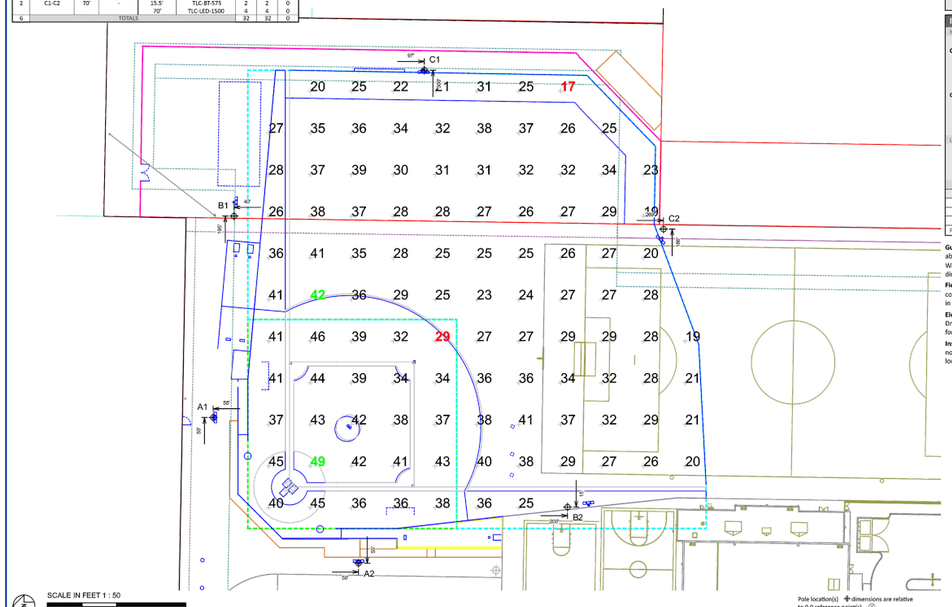


musco lighting. We Make It Happen.

PROJECT SUMMARY

EQUIPMENT LIST FOR AREAS SHOWN

QTY	LOCATION	SIZE	GRADE ELEVATION	Pole: MOUNTING HEIGHT	Luminaires: LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
2	A1-A2	70'	-	70'	TLC-LED-1200	1	1	0
				15.5'	TLC-BT-575	1	1	0
				70'	TLC-LED-1500	2	2	0
2	B1-B2	70'	-	15.5'	TLC-BT-575	1	1	0
				70'	TLC-LED-1500	5	5	0
2	C1-C2	70'	-	15.5'	TLC-BT-575	2	2	0
				70'	TLC-LED-1500	4	4	0
6			TOTALS			32	32	0



Pole location(s) ✛ dimensions are relative to 0,0 reference point(s) ⊙

Gilbert Christian K-8 Soccer Softball

Gilbert, AZ.

GRID SUMMARY

Name:	Softball
Size:	Irregular 300' / 360' / 300'
Spacing:	30.0' x 30.0'
Height:	3.0' above grade

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL FOOTCANDLES

	Infield	Outfield
Guaranteed Average:	35	25
Scan Average:	39.56	29.63
Maximum:	48.7	42.3
Minimum:	29.3	17.4
Avg / Min:	1.35	1.70
Guaranteed Max / Min:	2	2.5
Max / Min:	1.66	2.43
UG (adjacent pts):	1.26	1.75
CU:	0.76	
No. of Points:	25	82

LUMINAIRE INFORMATION

Color / CRI: 5700K - 75 CRI
Luminaire Output: 52,000 / 160,000 / 136,000 lumens
No. of Luminaires: 32
Total Load: 38.4 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
TLC-BT-575	>120,000	>120,000	>120,000
TLC-LED-1500	>120,000	>120,000	>120,000
TLC-LED-1200	>120,000	>120,000	>120,000

Reported per TM-21-11. See luminaire datasheet for details.

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

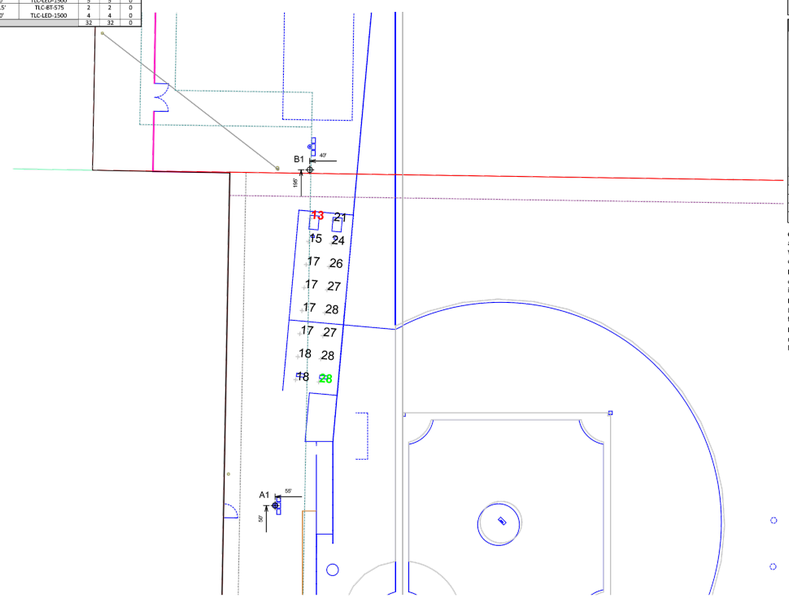
Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

ILLUMINATION SUMMARY

EQUIPMENT LIST FOR AREAS SHOWN

QTY	LOCATION	SIZE	GRADE ELEVATION	Pole: MOUNTING HEIGHT	Luminaires: LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
2	A1-A2	70'	-	70'	TLC-LED-1200	1	1	0
				15.5'	TLC-BT-575	1	1	0
				70'	TLC-LED-1500	2	2	0
2	B1-B2	70'	-	15.5'	TLC-BT-575	1	1	0
				70'	TLC-LED-1500	5	5	0
2	C1-C2	70'	-	15.5'	TLC-BT-575	2	2	0
				70'	TLC-LED-1500	4	4	0
6			TOTALS			32	32	0



Pole location(s) ✛ dimensions are relative to 0,0 reference point(s) ⊙

Gilbert Christian K-8 Soccer Softball

Gilbert, AZ.

GRID SUMMARY

Name:	LF Bull Pen
Size:	Irregular 300' / 360' / 300'
Spacing:	10.0' x 10.0'
Height:	3.0' above grade

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL FOOTCANDLES

	Entire Grid
Scan Average:	21.33
Maximum:	27.9
Minimum:	13.0
Avg / Min:	1.65
Max / Min:	2.15
UG (adjacent pts):	1.59
CU:	0.01
No. of Points:	16

LUMINAIRE INFORMATION

Color / CRI: 5700K - 75 CRI
Luminaire Output: 52,000 / 160,000 / 136,000 lumens
No. of Luminaires: 32
Total Load: 38.4 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
TLC-BT-575	>120,000	>120,000	>120,000
TLC-LED-1500	>120,000	>120,000	>120,000
TLC-LED-1200	>120,000	>120,000	>120,000

Reported per TM-21-11. See luminaire datasheet for details.

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

ILLUMINATION SUMMARY

Gilbert Christian K-8 Soccer Softball

Gilbert, AZ.

EQUIPMENT LAYOUT

INCLUDES:
- Softball

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

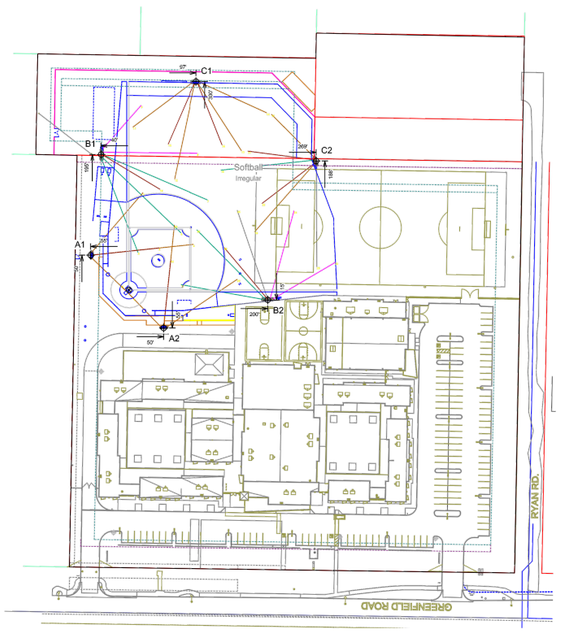
Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

EQUIPMENT LIST FOR AREAS SHOWN

QTY	LOCATION	CLASS	GRADE ELEVATION	Pole: MOUNTING HEIGHT	Luminaires: LUMINAIRE TYPE	QTY / POLE
2	A1-A2	LSS70AA	-	70'	TLC-LED-1200	1
				15.5'	TLC-BT-575	1
				70'	TLC-LED-1500	2
2	B1-B2	LSS70A	-	15.5'	TLC-BT-575	1
				70'	TLC-LED-1500	5
2	C1-C2	LSS70A	-	15.5'	TLC-BT-575	2
				70'	TLC-LED-1500	4
6			TOTALS			32

SINGLE LUMINAIRE AMPERAGE DRAW CHART

Ballast Specifications (.90 min power factor)	Line Amperage Per Luminaire (max draw)					
Single Phase Voltage	208 (AA)	220 (BB)	240 (BB)	277 (BB)	347 (BB)	380 (BB)	480 (BB)
TLC-BT-575	3.4	3.2	2.9	2.5	2.0	1.8	1.5
TLC-LED-1500	8.5	8.1	7.4	6.4	5.1	4.7	3.7
TLC-LED-1200	7.0	6.6	6.1	5.2	4.2	4.0	3.0



Pole location(s) ✛ dimensions are relative to 0,0 reference point(s) ⊙

EQUIPMENT LAYOUT

ENERGY SYSTEMS DESIGN
7135 East Camelback Road
Suite 275
Scottsdale AZ 85251
P: 480.481.4800

Design Contact:
RICK BACA

Project #
191037

ENTIRE SHEET

2929.COM
DEUTSCH ARCHITECTURE GROUP
4600
EAST INDIAN SCHOOL RD
PHOENIX, ARIZONA 85018
602-840-2929 P
602-840-6646 F

Registered Professional Engineer
CERTIFICATE NO.
51498
HALLEH
LANDON
Date Signed 5/7/2020
ARIZONA U.S.A.

EXPIRES 9-30-2022

TITAN SOLAR FIELD - GCS
GREENFIELD CAMPUS
4341 S. Greenfield Rd.

Revisions

1	5/22/20	DR COMMENTS

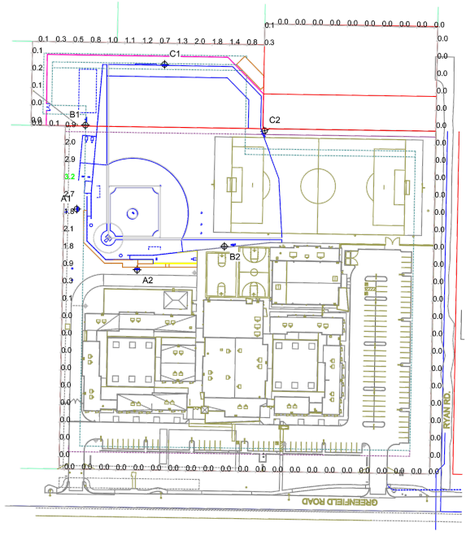
PROJECT NO:
DRAWN BY: RJB
CHK'D BY: HL

MUSCO BALL FIELD DESIGN DOCUMENTS

E-103

EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
2	A1-A2	70'	-	70'	TLC-LED-1200	1	1	0
				15.5'	TLC-BT-575	1	1	0
				70'	TLC-LED-1500	2	2	0
2	B1-B2	70'	-	15.5'	TLC-BT-575	1	1	0
				70'	TLC-LED-1500	5	5	0
2	C1-C2	70'	-	15.5'	TLC-BT-575	2	2	0
				70'	TLC-LED-1500	4	4	0
6	TOTALS					32	32	0



SCALE IN FEET 1 : 120
0' 120' 240'

ENGINEERED DESIGN By: Ryan A. Marsh, LC • File #181129C-ProdR3 • 27-May-20

Pole location(s) ✛ dimensions are relative to 0,0 reference point(s) ⊕

Gilbert Christian K-8 Soccer Softball
Gilbert, AZ.

GRID SUMMARY

Name:	Property Line
Spacing:	30.0'
Height:	3.0' above grade

ILLUMINATION SUMMARY

HORIZONTAL FOOTCANDLES

	Entire Grid
Scan Average:	0.3333
Maximum:	3.161
Minimum:	0.000
No. of Points:	99

LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	52,000 / 160,000 / 136,000 lumens
No. of Luminaires:	32
Total Load:	38.4 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
TLC-BT-575	>120,000	>120,000	>120,000
TLC-LED-1500	>120,000	>120,000	>120,000
TLC-LED-1200	>120,000	>120,000	>120,000

Reported per TM-21-11. See luminaire datasheet for details.

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

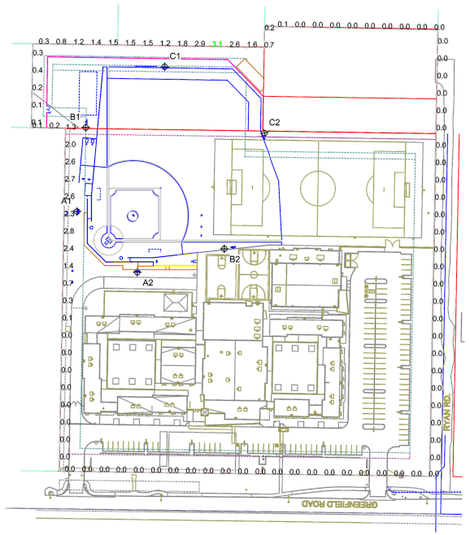
Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

We Make It Happen.

ILLUMINATION SUMMARY

EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
2	A1-A2	70'	-	70'	TLC-LED-1200	1	1	0
				15.5'	TLC-BT-575	1	1	0
				70'	TLC-LED-1500	2	2	0
2	B1-B2	70'	-	15.5'	TLC-BT-575	1	1	0
				70'	TLC-LED-1500	5	5	0
2	C1-C2	70'	-	15.5'	TLC-BT-575	2	2	0
				70'	TLC-LED-1500	4	4	0
6	TOTALS					32	32	0



SCALE IN FEET 1 : 120
0' 120' 240'

ENGINEERED DESIGN By: Ryan A. Marsh, LC • File #181129C-ProdR3 • 27-May-20

Pole location(s) ✛ dimensions are relative to 0,0 reference point(s) ⊕

Gilbert Christian K-8 Soccer Softball
Gilbert, AZ.

GRID SUMMARY

Name: Property Line
Spacing: 30.0'
Height: 3.0' above grade

ILLUMINATION SUMMARY

MAX VERTICAL FOOTCANDLES

Entire Grid
Scan Average: 0.4560
Maximum: 3.112
Minimum: 0.000
No. of Points: 99

LUMINAIRE INFORMATION

Color / CRI: 5700K - 75 CRI
Luminaire Output: 52,000 / 160,000 / 136,000 lumens
No. of Luminaires: 32
Total Load: 38.4 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
TLC-BT-575	>120,000	>120,000	>120,000
TLC-LED-1500	>120,000	>120,000	>120,000
TLC-LED-1200	>120,000	>120,000	>120,000

Reported per TM-21-11. See luminaire datasheet for details.

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

We Make It Happen.

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ILLUMINATION SUMMARY

ENERGY SYSTEMS DESIGN
7135 East Camelback Road
Suite 275
Scottsdale AZ 85251
P: 480.481.4800

Design Contact:
RICK BACA

Project #
191037

2929.COM
DEUTSCH ARCHITECTURE GROUP
Registered Professional Engineer (Civil)
CERTIFICATE NO.
51498
HALLEH LANDON
Date Signed 5/7/2020
ARIZONA U.S.A.
EXPIRES 9-30-2022

4600
EAST INDIAN SCHOOL RD
PHOENIX, ARIZONA 85018
602-840-2929 P
602-840-6646

TITAN SOLAR FIELD - GCS
GREENFIELD CAMPUS

4341 S. Greenfield Rd.

Revisions

1	5/22/20	DR COMMENTS

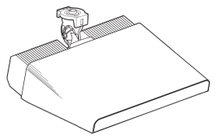
PROJECT NO:
DRAWN BY: RJB
CHK'D BY: HL

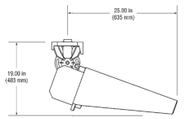
MUSCO BALL FIELD DESIGN DOCUMENTS

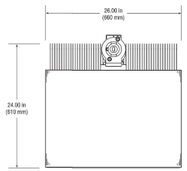
E-104

⚠ ADDED SHEET

Datasheet: **TLC-LED-1200 Luminaire and Driver**







Luminaire Data

Weight (luminaire)	45 lb (20 kg)
UL listing number	E338094
UL listed for USA / Canada	UL1598 CSA-C22.2 No.250.0
CE Declaration	LVD, EMC, RoHS
Ingress protection, luminaire	IP65
Material and finish	Aluminum, powder-coat painted
Wind speed rating (aiming only)	150 mi/h (67 m/s)
UL, IEC ambient temperature rating, luminaire	50°C (122°F)

Photometric Characteristics

Projected lumen maintenance per IES TM-21-11	
L90 (20k)	>120,000 h
L80 (20k)	>120,000 h
L70 (20k)	>120,000 h
Lumens[1]	136,000
CIE correlated color temperature	5700 K
Color rendering index (CRI)	75 typ, 70 min

Footnotes:

1) Incorporates appropriate dirt depreciation factor for life of luminaire.

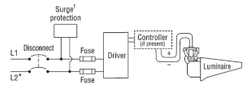
Datasheet: **TLC-LED-1200 Luminaire and Driver**

Driver Data

Electrical Data

Rated wattage[1]	
Per driver	1170 W
Per luminaire	1170 W
Number of luminaires per driver	1
Starting (inrush) current	<40 A, 256 µs
Fuse rating	15 A
UL, IEC ambient temperature rating, electrical components enclosure	50°C (122°F)
Ingress protection, electrical components enclosure	IP54
Efficiency	95%
Dimming mode	optional
Range, energy consumption	14 – 100%
Range, light output	19 – 100%

Typical Wiring



* If L2 (com) is neutral then not switched or fused.
† Not present if indoor installation.

	200 Vac 50/60 Hz	208 Vac 60 Hz	220 Vac 50/60 Hz	230 Vac 50 Hz	240 Vac 50/60 Hz	277 Vac 60 Hz	347 Vac 60 Hz	380 Vac 50/60 Hz	400 Vac 50 Hz	415 Vac 50 Hz	480 Vac 60 Hz
Max operating current per luminaire[2]	7.26 A	6.98 A	6.60 A	6.31 A	6.05 A	5.24 A	4.18 A	3.82 A	3.63 A	3.50 A	3.03 A

Footnotes:

1) Rated wattage is the power consumption, including driver efficiency losses, at stabilized operation in 25°C ambient temperature environment.

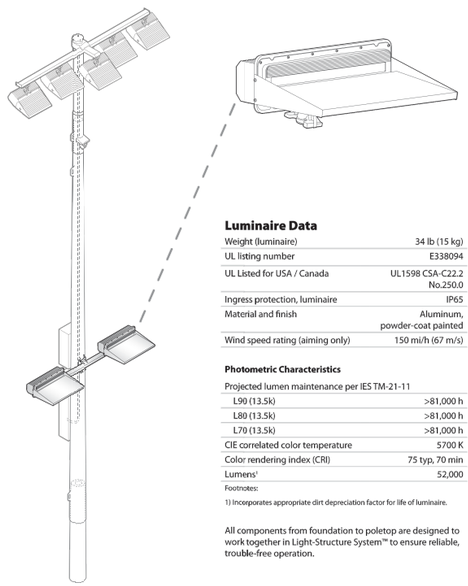
2) Operating current includes allowance for 0.90 minimum power factor, operating temperature, and LED light source manufacturing tolerances.

Notes

1. Use thermal magnetic HID-rated or D-curve circuit breakers.
2. See *Musco Control System Summary* for circuit information.

Datasheet: **Light-Structure System™**

Luminaire and Driver Components – TLC-BT-575



Luminaire Data

Weight (luminaire)	34 lb (15 kg)
UL listing number	E338094
UL Listed for USA / Canada	UL1598 CSA-C22.2 No.250.0
Ingress protection, luminaire	IP65
Material and finish	Aluminum, powder-coat painted
Wind speed rating (aiming only)	150 mi/h (67 m/s)

Photometric Characteristics

Projected lumen maintenance per IES TM-21-11	
L90 (13.5k)	>81,000 h
L80 (13.5k)	>81,000 h
L70 (13.5k)	>81,000 h
CIE correlated color temperature	5700 K
Color rendering index (CRI)	75 typ, 70 min
Lumens[1]	52,000

Footnotes:

1) Incorporates appropriate dirt depreciation factor for life of luminaire.

All components from foundation to poletop are designed to work together in Light-Structure System™ to ensure reliable, trouble-free operation.

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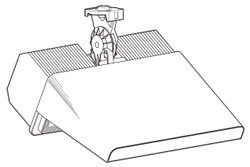
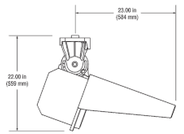
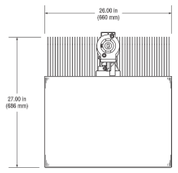
www.musco.com • lighting@musco.com
1

Datasheet: **TLC-LED-1500 Luminaire and Driver**







Luminaire Data

Weight (luminaire)	67 lb (30 kg)
UL listing number	E338094
UL listed for USA / Canada	UL1598 CSA-C22.2 No.250.0
CE Declaration	LVD, EMC, RoHS
Ingress protection, luminaire	IP65
Material and finish	Aluminum, powder-coat painted
Wind speed rating (aiming only)	150 mi/h (67 m/s)
UL, IEC ambient temperature rating, luminaire	50°C (122°F)

Photometric Characteristics

Projected lumen maintenance per IES TM-21-11	
L90 (20k)	>120,000 h
L80 (20k)	>120,000 h
L70 (20k)	>120,000 h
Lumens[1]	160,000
CIE correlated color temperature	5700 K
Color rendering index (CRI)	75 typ, 70 min

Footnotes:

1) Incorporates appropriate dirt depreciation factor for life of luminaire.

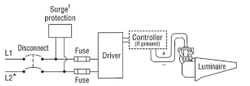
Datasheet: **TLC-LED-1500 Luminaire and Driver**

Driver Data

Electrical Data

Rated wattage[1]	
Per driver	1430 W
Per luminaire	1430 W
Number of luminaires per driver	1
Starting (inrush) current	<40 A, 256 µs
Fuse rating	15 A
UL, IEC ambient temperature rating, electrical components enclosure	50°C (122°F)
Ingress protection, electrical components enclosure	IP54
Efficiency	95%
Dimming mode	optional
Range, energy consumption	12 – 100%
Range, light output	17 – 100%

Typical Wiring



* If L2 (com) is neutral then not switched or fused.
† Not present if indoor installation.

	200 Vac 50/60 Hz	208 Vac 60 Hz	220 Vac 50/60 Hz	230 Vac 50 Hz	240 Vac 50/60 Hz	277 Vac 60 Hz	347 Vac 60 Hz	380 Vac 50/60 Hz	400 Vac 50 Hz	415 Vac 50 Hz	480 Vac 60 Hz
Max operating current per luminaire[2]	8.86 A	8.52 A	8.06 A	7.71 A	7.39 A	6.40 A	5.11 A	4.67 A	4.43 A	4.27 A	3.70 A

Footnotes:

1) Rated wattage is the power consumption, including driver efficiency losses, at stabilized operation in 25°C ambient temperature environment.

2) Operating current includes allowance for 0.90 minimum power factor, operating temperature, and LED light source manufacturing tolerances.

Notes

1. Use thermal magnetic HID-rated or D-curve circuit breakers.
2. See *Musco Control System Summary* for circuit information.

Datasheet: **Light-Structure System™**

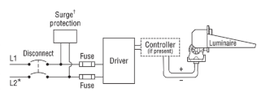
Luminaire and Driver Components – TLC-BT-575

Driver Data

Electrical Data

Rated wattage[1]	
Per driver	575 W
Per luminaire	575 W
Number of luminaires per driver	1
Starting (inrush) current	<40 A, 256 µs
Fuse rating	15 A
UL, IEC ambient temperature rating, electrical components enclosure	50°C (122°F)
Ingress protection, electrical components enclosure	IP54
Efficiency	95%

Typical Wiring



* If L2 (com) is neutral then not switched or fused.
† Not present if indoor installation.

	200 Vac 50/60 Hz	208 Vac 60 Hz	220 Vac 50/60 Hz	230 Vac 50 Hz	240 Vac 50/60 Hz	277 Vac 60 Hz	347 Vac 60 Hz	380 Vac 50/60 Hz	400 Vac 50 Hz	415 Vac 50 Hz	480 Vac 60 Hz
Max operating current[2] per luminaire	3.48 A	3.35 A	3.16 A	3.03 A	2.90 A	2.51 A	2.01 A	1.83 A	1.74 A	1.68 A	1.45 A

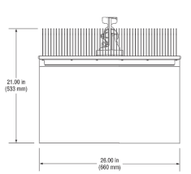
Footnotes:

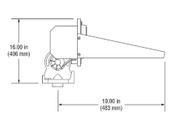
1) Rated wattage is the power consumption, including driver efficiency losses, at stabilized operation in 25°C ambient temperature environment.

2) Operating current includes allowance for 0.90 minimum power factor, operating temperature, and LED light source manufacturing tolerances.

Notes

1. Use thermal magnetic HID-rated or D-curve circuit breakers.
2. See Musco *Control System Summary* for circuit information.





2929.COM

DEUTSCH ARCHITECTURE GROUP

Registered Professional Engineer (Civil)
CERTIFICATE NO.
51498
HALLEH
LANDON
Date Signed 5/7/2020
ARIZONA U.S.A.

EXPIRES 9-30-2022

4600
EAST INDIAN SCHOOL RD
PHOENIX, ARIZONA 85018
602-840-2929 P
602-840-6646

TITAN SOLAR FIELD - GCS
GREENFIELD CAMPUS

4341 S. Greenfield Rd.

NOTICE OF EXTENDED CERTIFICATION AND APPROVAL PERIOD PROVISION: THIS CONTRACT ALLOWS THE OWNER TO CERTIFY AND APPROVE BILLINGS AND ESTIMATES WITHIN 30 DAYS AFTER THE BILLINGS AND ESTIMATES ARE RECEIVED FROM THE CONTRACTOR.

Revisions

1	5/22/20	DR COMMENTS

PROJECT NO:
DRAWN BY: RJB
CHK'D BY: HL

MUSCO BALL FIELD DESIGN DOCUMENTS

E-105

⚠ ADDED SHEET

ENERGY SYSTEMS DESIGN
7135 East Camelback Road
Suite 275
Scottsdale, AZ 85251
P: 480.481.4500

Design Contact:
RICK BACA

Project #
191037

SES LOAD CALCULATION			
EXISTING LOAD PER AS-BUILT DOCUMENTS, DATED 08/2017	831.49 kva =	**1001 amps**
NEW PANEL HP1	73.49 kva =	**88 amps**
Total	904.98 kva	
	904.98 kva =	**1089 amps @ 480v/3ph**

Short-Circuit Calculations

The following calculations are based on the "Point-by Point" method where:

Isc = Isc x M **M= 1/(1+f)** **f = 1.732 x L x I / C x E**

XFMR: IP(sca)= IP(sca)x Vp x%Z / 100,000xKVA **IS(sca)= Vp x M x IS(sca) / Vs**

SOURCE FAULT VALUE DERIVED FROM SRP ESS FAULT CURRENT TABLES, TABLE 3

Fault Point	Panel Transformer	Source (Fault Point)	Source I (amps)	Conduit Type	Wire/Bus Size	Wire/Bus Type	'C' value	E (volts)	L (length)	X'FMR KVA	X'FMR Z	f	M	Isc
1	SES													19997
2	HP1	1	19997	NM	1 Set(s) of 1	AL	4678	480	140			2.159	0.32	6329

PHASE 3 **VOLTS** 277/480Y **WIRE** 4 **MAIN** 100A MAIN CB — NORMAL — **NEW HP1** — AIC 14000 — 100A BUS — NEMA-3R

TYPE	DESCRIPTION	QTY	QTY TYP	BKR	CKT	A PH	B PH	C PH	CKT	BKR	QTY TYP	QTY	DESCRIPTION	TYPE
C	MUSCO BASEBALL LTG, POLE A1			20	1	2133			2				BUSSED SPACE	--
C					3		2133		4				BUSSED SPACE	--
C				3	5			2133	6				BUSSED SPACE	--
C	MUSCO BASEBALL LTG, POLE A2			20	7	2133			8				BUSSED SPACE	--
C					9		2133		10				BUSSED SPACE	--
C				3	11			2133	12				BUSSED SPACE	--
C	MUSCO BASEBALL LTG, POLE B1			20	13	3546			14				BUSSED SPACE	--
C					15		3546		16				BUSSED SPACE	--
C				3	17			3546	18				BUSSED SPACE	--
C	MUSCO BASEBALL LTG, POLE B2			20	19	3546			20				BUSSED SPACE	--
C					21		3546		22				BUSSED SPACE	--
C				3	23			3546	24				BUSSED SPACE	--
C	MUSCO BASEBALL LTG, POLE C1			20	25	3019			26				BUSSED SPACE	--
C					27		3019		28				BUSSED SPACE	--
C				3	29			3019	30				BUSSED SPACE	--
C	MUSCO BASEBALL LTG, POLE C2			20	31	3019			32				BUSSED SPACE	--
C					33		3019		34				BUSSED SPACE	--
C				3	35			3019	36				BUSSED SPACE	--
C	MUSCO CNTRL/MNTRG CABINET			20	37	1200 / 2160			38	40			LP1	XFMR
C	COMMUNICATION MODULE				39		1200 / 660		40				LP1	XFMR
C				3	41			1200 / 360	42	3			LP1	XFMR

TOTAL CODE LOAD: 73.49 KVA / (1.73 * 480 V) = 88.39 AMPS
All Phases: CONTINUOUS LOAD = 58068 VA connected * 1.25 = 72.59 KVA code load
A Phase: CONTINUOUS LOAD = 20396 VA connected * 1.25 = 25.50 KVA code load
B Phase: CONTINUOUS LOAD = 19076 VA connected * 1.25 = 23.85 KVA code load
C Phase: CONTINUOUS LOAD = 18596 VA connected * 1.25 = 23.25 KVA code load
All Phases: NONCONTINUOUS LOAD = 900 VA connected * 1 = 0.90 KVA code load
A Phase: NONCONTINUOUS LOAD = 360 VA connected * 1 = 0.36 KVA code load
B Phase: NONCONTINUOUS LOAD = 180 VA connected * 1 = 0.18 KVA code load
C Phase: NONCONTINUOUS LOAD = 360 VA connected * 1 = 0.36 KVA code load

http://www.panelschedules.com

PHASE 3 **VOLTS** 120/208Y **WIRE** 4 **MAIN** 60A MAIN CB — NORMAL — **NEW LP1** — AIC 10000 — 60A BUS — NEMA-3R

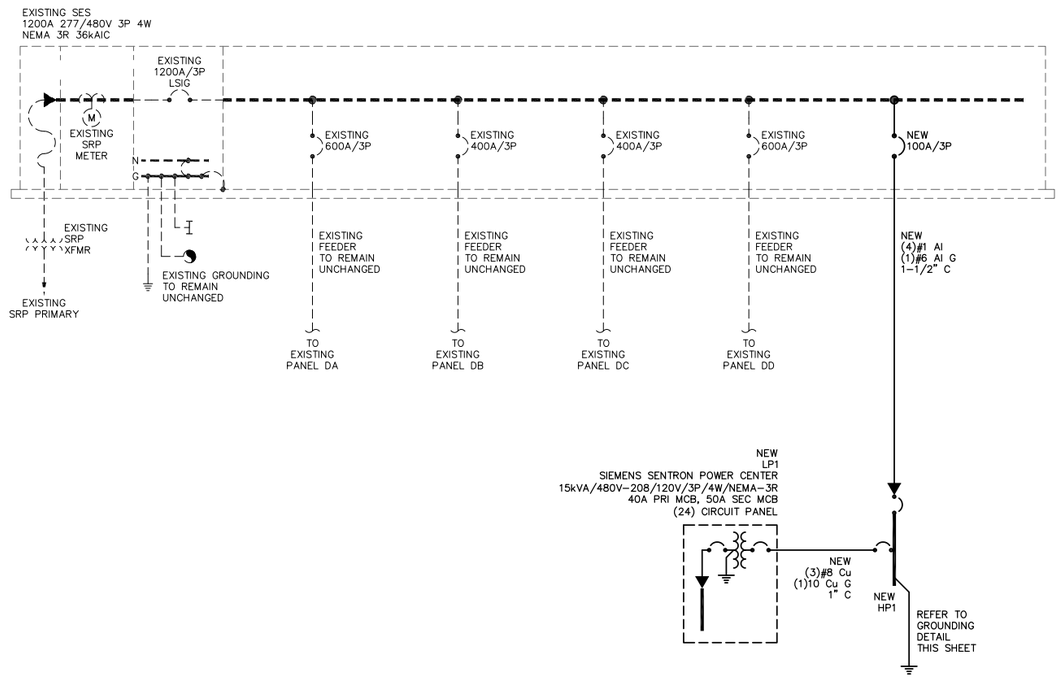
TYPE	DESCRIPTION	QTY	QTY TYP	BKR	CKT	A PH	B PH	C PH	CKT	BKR	QTY TYP	QTY	DESCRIPTION	TYPE
C	MUSCO CNTRL/MNTRG CABINET			20 / 1	1	1800			2				BUSSED SPACE	--
C	BASEBALL SCOREBOARD			20 / 1	3		480		4				BUSSED SPACE	--
N	RCPT DUGOUT/BULLPEN NORTH			20 / 1	5			360	6				BUSSED SPACE	--
N	RCPT DUGOUT/BULLPEN WEST			20 / 1	7	360			8				BUSSED SPACE	--
N	RCPT BEHIND BACKSTOP			20 / 1	9		180		10				BUSSED SPACE	--
--	BUSSED SPACE				11			0	12				BUSSED SPACE	--
--	BUSSED SPACE				13	0			14				BUSSED SPACE	--
--	BUSSED SPACE				15		0		16				BUSSED SPACE	--
--	BUSSED SPACE				17			0	18				BUSSED SPACE	--
--	BUSSED SPACE				19	0			20				BUSSED SPACE	--
--	BUSSED SPACE				21		0		22				BUSSED SPACE	--
--	BUSSED SPACE				23			0	24				BUSSED SPACE	--

TOTAL CODE LOAD: 3.76 KVA / (1.73 * 208 V) = 10.41 AMPS
All Phases: CONTINUOUS LOAD = 2250 VA connected * 1.25 = 2.85 KVA code load
A Phase: CONTINUOUS LOAD = 1800 VA connected * 1.25 = 2.25 KVA code load
B Phase: CONTINUOUS LOAD = 480 VA connected * 1.25 = 0.60 KVA code load
All Phases: NONCONTINUOUS LOAD = 900 VA connected * 1 = 0.90 KVA code load
A Phase: NONCONTINUOUS LOAD = 360 VA connected * 1 = 0.36 KVA code load
B Phase: NONCONTINUOUS LOAD = 180 VA connected * 1 = 0.18 KVA code load
C Phase: NONCONTINUOUS LOAD = 360 VA connected * 1 = 0.36 KVA code load

http://www.panelschedules.com

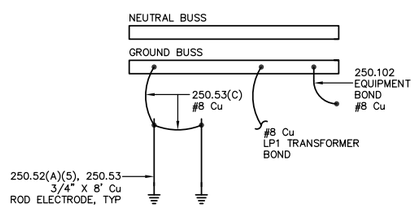
SHEET NOTES

1. NEW ELECTRICAL EQUIPMENT SHALL BE MANUFACTURED BY SIEMENS TO MATCH EXISTING EQUIPMENT.



PARTIAL ONE-LINE DIAGRAM

SCALE: NTS



GROUNDING DETAIL HP1 / LP1

SCALE: NTS

ENERGY SYSTEMS DESIGN
7135 East Camelback Road
Suite 275
Scottsdale AZ 85251
P: 480.461.4600
Design Contact: RICK BACA
Project #: 1910.37

2929.COM
DUTSCH ARCHITECTURE GROUP
Registered Professional Engineer (Electrical)
CERTIFICATE NO.
51498
HALLEN LANDON
Date Signed 03/17/2020
ARIZONA U.S.A.
EXPIRES 9-30-2022
4600
EAST INDIAN SCHOOL RD
PHOENIX, ARIZONA 85018
602-840-2929 P
602-840-6646

TITAN SOLAR FIELD - GCS
GREENFIELD CAMPUS
4341 S. Greenfield Rd.

Revisions		
1	5/22/20	DR COMMENTS

PROJECT NO:
DRAWN BY: RJB
CHK'D BY: HL

ELECTRICAL DIAGRAMS, SCHEDULES & CALCS

E-300

FILE: J:\2019\191037_GCS_BallFields\Ballfield redone due to existing conditions\E300.dwg
PLOTTED BY: Rick.Baca
PLOTTED: 05.28.2020 - 6:55pm

ARCHITECTURE GROUP 4600 East Indian School Road Phoenix, Arizona 85018 P|602.840.2929 F|602.840.6646 www.2929.com

TOWN OF GILBERT

TITAN SOLAR FIELD AT GILBERT CHRISTIAN SCHOOL GREENFIELD CAMPUS

CONDITIONAL USE PERMIT PROJECT NARRATIVE

Gilbert Christian School is an existing K through Eight campus located at 4341 S. Greenfield Road. GCS is requesting a Conditional Use Permit per Chapter 1, Article 2.9, Table 2.902 for the lighted outdoor recreation area. Under this request for a conditional use permit we are seeking approval for outdoor recreational field lighting including scoreboard. The limits of work under the Conditional Use permit will span between two parcels. The work will be done on the North-East corner of the primary parcel (304-70-986), extending to the second parcel (304-59-011H) to the East, which is under land lease to accommodate a High School sized field.

The proposed field lighting would be utilized approximately 130 times from November to May, primarily Monday through Friday to accommodate baseball games. On game day lighting would operate starting 30 minutes prior to sunset until 10pm at the latest. The specified fixture types are fully shielded and have been located to minimize any light spill at the property line while still providing proper field of play light levels for player safety. This type of operation complies with Chapter 42, Sec. 42-34 (i)(7) of the Town of Gilbert Code of Ordinances.

Spanish feel, such as arched windows, as well as addressing the large blank space on the second elevation. The applicant will likely remove that elevation from the set. Other than those comments, staff was pleased with what the applicant has brought forward and looks for input from the Commission on the elevations.

DISCUSSION:

Commissioner Simon felt there may be structural issues down the road with the west facing lots as it appears that the doors are flush with the buildings rather than being recessed. There may be concerns from homeowners regarding dry rot or other issues with the west facing doors. Aside from that comment, he liked the neighborhood and the properties.

Mr. Rogers will relay that to the applicant.

Commissioner Alibrandi noted the 5 feet between the buildings and the block wall and asked if that was to code.

Mr. Rogers advised that the conditions were modified under the zoning PAD which was approved by the Commission a few months ago. They are looking to have the small Spanish village feel where the buildings are essentially connected to each other. There will not be an additional block wall between the buildings, but the wall of one structure will essentially be the wall for the backyard of the adjacent home.

Commissioner Alibrandi understood the intent, having lived in a Latin American country. The builder may try to say it is quaint for marketing purposes, but he felt it was just a way to jam in more density. He felt it was too jammed up.

Chair Andersen agreed with Mr. Roger's assessment on the elevations and supported the critique of the different elevations and floor plans. He agreed that they need more work and felt Mr. Roger's suggestions were spot on.

3. **DR06-25-B GILBERT CHRISTIAN SCHOOL - TITAN SOLAR FIELD: Site plan, landscaping, grading and drainage, elevations, floor plans, lighting, and colors and materials for approximately 11.01 acres, generally located at the northeast corner of Greenfield Road and Ryan Road, and zoned Single Family -43 (SF-43).**

   UP20-03 GILBERT CHRISTIAN SCHOOL - TITAN SOLAR FIELD: Request to approve a Conditional Use Permit for approx. 11.01 acres located at the northeast corner of Greenfield Road and Ryan Road to allow outdoor recreational field lighting in the Single Family -43 (SF-43) zoning district.

Senior Planner Ashlee MacDonald presented DR06-25-B and UP20-03 Gilbert Christian School – Titan Solar Field, located off of Greenfield Road north of Ryan Road. It is the site of the existing campus. The request is to allow ballfield lights as well as an expansion of the approved site plan. The surrounding properties are zoned residential and the school site is also zoned Residential SF-43, which does allow schools. The proposal is to expand onto a parcel that was not included in the original Design Review. The applicant is looking for feedback on the Use Permit request to allow for lighted outdoor recreation facilities. They are proposing a total of 6 light poles that are 70 feet high around the perimeter of the field. The applicant is looking to move forward with construction documents at risk.

The property is zoned SF-43 and the applicant is not proposing any new buildings within the site. The existing Design Review did include a baseball field which ended at the property line and did not extend onto this portion of the site. There is a proposed 6'8" wall. Staff has advised the applicant that they will need relocate that wall to the property line and that it will need to be an 8-foot wall. The mobile sports fence shown in blue on the site plan is not a permanent structure but will be brought onto the field as needed. The applicant will need to modify their landscape plans to include trees and shrubs instead of just decomposed granite to meet code requirements, particularly along the north and south to buffer the adjoining uses. The landscape palette is consistent with the landscaping on the remainder of the site.

The Use Permit is being requested to allow 6 ballfield lights. Staff has requested additional information from the applicant in order to determine whether the Findings of Fact are being met. The Code requires that the lights be set back a distance equal to the height of the pole. At 70 feet tall, these lights will need to be shifted inward or the height reduced. Staff will be interested to hear what the surrounding residential property owners have to say about the lights. The Commission was asked for feedback on the expansion into the new parcel and the proposed field lighting.

DISCUSSION:

Chair Andersen asked about the current setback requirements for the lights.

Ms. MacDonald clarified that lights need to be set back a distance equal to the height of the pole as measured from the property line.

Commissioner Cavenee understood that the block wall would move out to the property line and the landscaping would be inside the fenced area so that the neighbors would not benefit from the landscaping, but the school will. He had an opportunity to build a ballfield in Gilbert years ago and the code requirement at that time was that the lights had to be the most efficient shielded lights in the market. The lights were expensive but were designed to have very little light bleed behind them. He never heard a complaint regarding those lights. He would be interested in seeing what kind of lights would be used and what the standard height is for ballfield lights. He felt 70 feet was a little tall. He felt it looked good as long as they use the right lights. He noted the lights would be brought into the field a little bit. The light out in the left center field would be 45 feet from the property line and may have an impact on residential.

Vice Chair Bloomfield noted there were several parcels behind the area of the expansion. He asked if there was an access easement through the center of those lots to provide access to the interior lots. Will this negatively impact that opportunity?

Ms. MacDonald will provide that information moving forward. She understood that there was access off of Superstition Drive. Staff has asked the applicant to provide an ALTA survey showing any easements or other items that might impact this property, but that has not been received to date.

Vice Chair Bloomfield stated that was his only concern. He felt this was a unique solution to be able to provide a full-size ballfield for their school. He applauded their efforts and wished them success.

4. **DR20-33 UND AEROSPACE FOUNDATION DEVELOPMENT: Site plan, landscaping, grading and drainage, elevations, floor plans, lighting, and colors and materials for approximately 9.3 acres, generally located at the northwest corner of Williams Field Road and Somerton Boulevard, and zoned Multi-Family/Medium (MF/M) with a Planned Area Development (PAD) overlay.**

Planner Sydney Bethel presented DR20-33 UND Aerospace Foundation Development. The subject site is located at the northwest corner of Williams Field Road and Somerton Boulevard. The site is located within the Cooley Station area and the greater Gateway Character Area. A graphic was provided on projects in the area that are either under construction or recently approved. Staff is looking for feedback on the site layout and general elevations. The applicant has received staff's first review comments and has provided staff with an updated site plan and elevations. It is not a complete second submittal. The proposed 169-unit multi-family development with a density of 18.2 DU/Acre will be developed in two phases. Phase 1 is located at the northeast corner with 49 units intended for student housing. The University of North Dakota (UND) has a campus located in the East Valley. Phase 2 is intended to be 120 units of market-rate apartments. This submittal is for the master site plan and elevations were not included. The second point of access has been revised along Haskell Street and the wall dividing the two phases has been removed to create a sense of openness to be in line with the Cooley Station area. First floor patios with access to the street frontage have been added in the Phase 1 units fronting Haskell and Somerton. For Phase 2, staff has requested that the buildings be relocated along Williams Field Road to activate